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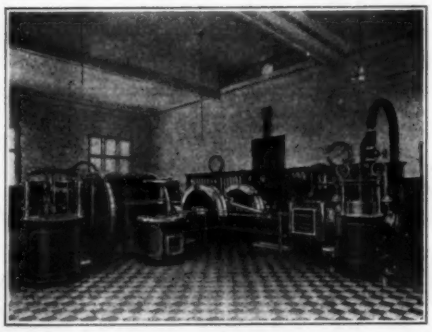

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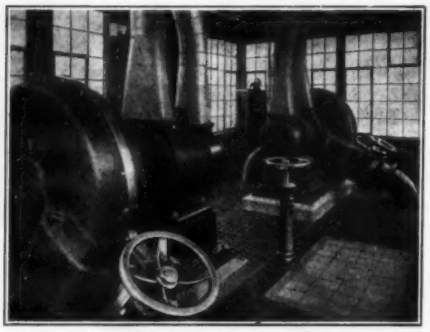

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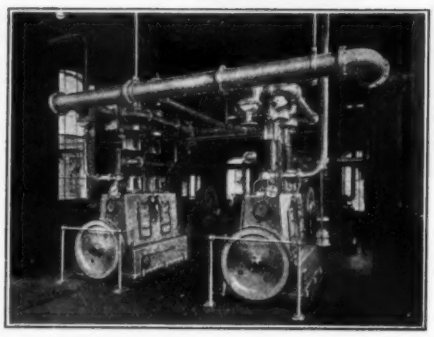

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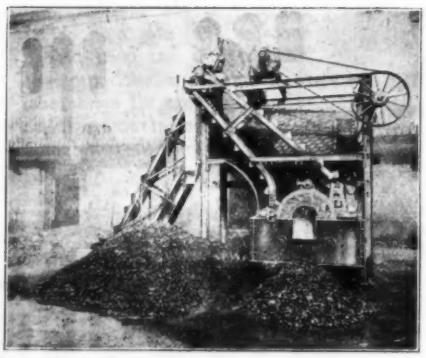

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CONTENTS

EDITORIAL NOTES.

Confidence 241
Attractive Tariffs 241
The Demand Charge 242
A "Free Gas" Scheme 242
The Gas Unit 242
In Support of 4,000 B.Th.U. 243
Non-Skid Roads 243
Follow My Leader 243
Interesting Our Consumers 244
The Bulletin 244

Correspondence—
Small Domestic Coke Boilers 244
"Windows that Ruin Showrooms" . . 244
"Colouring Gas Appliances" 245
A Question of Morals 245
Personal—
A Notable Jubilee at Northampton . . . 245
Obituary 246
News in Brief 246–7

Mr. Evetts' Gas Legislation Articles . . . 246
Collecting the Service Charge 247
Alkali, &c., Works Order 247
The Institution of Heating and Ventilating Engineers—Birmingham Branch Visit Wellington Tube Works 247
Glasgow Corporation Sued—Royalties for Maclaurin Process 247
Forthcoming Engagements 247
Fire at Wapping Gas-Works—Engineer's Official Statement 248
New Industrial Scale at Newton-in-Makerfield 248
Generation of Electricity by Town Gas—Melbourne Contract 248
Belfast Gas Department—Contributions to City Hall Charges 248
Effective Gas Floodlighting at Newbury . . 248
G.D.A. for Women, No. 1 Centre, Halifax—The First Year's Work Reviewed . . . 249
A Memorable Gathering at Altrincham . . 249
Sassoon House, Peckham 249
A New Portable Fire 249
A Communique from the International Gas Union 249
New Showrooms at Glasgow 250

Lytham St. Annes Offers Two-Part Tariff . 251
London and Southern District Junior Gas Association—
Standardization and Quality Control. By S. F. Dunkley, O.B.E. 252
Wales and Monmouthshire Junior Gas Association—
Some Aspects of Town Gas for Industrial Purposes. By G. E. Thomas 258
Yorkshire Junior Gas Association—
Long-Distance Gas Distribution in Germany. By Dr. Fritz Gummert—Discussion . . 260
Gas Undertakings' Results 261
Diaries, Calendars, &c. 261
Gas Markets and Manufactures—
Stock Market Report 262
Current Sales of Gas Products 262
Contracts Advertised To-Day 262
Trade Notes 262
New John Wright Cooker Literature . . . 262

Stock and Share List 263

For Advertisers' Index see End of "JOURNAL"—PAGE 269.

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Gas Journal

JANUARY 30, 1935

Vol. 209. 87th Year No. 3741.

Editorial Notes

Confidence

DISCUSSING attractive gas pricing in these columns last week we suggested that the reason for holding back the adoption of attractive tariffs is in a great many cases a lack of confidence in the services which gas is able to render. Service to the consumer, we emphasized, is what matters. This is the deciding factor as to the form of energy he will employ. We must be strong in the belief that the cooking service, the heating service, and the hot water service a consumer can obtain from gas are fundamentally greater than can be afforded by electricity. "New rates," we said, "must be formulated in the knowledge that gas can provide superior service;" and we put forward as a motto, "More Confidence; Attractive Tariffs."

It is not a scrap of use pointing to the ways of the electricians and concluding that their schemes are doomed to economic failure. Let the electricians get on with their job, and let us get on with ours. Let us forget for the moment to ask for fair play. We say this in spite of the extraordinary utterances of Mr. George Lansbury, M.P., at Poplar last week. The Poplar Borough Council is, of course, electricity mad, and it has launched a "novel scheme" to encourage the use of electricity in the homes of the people. This "novel scheme" is to supply a cooker free, and install and maintain it free of charge. An aluminium kettle is thrown in with the offer, and current is supplied at 1d. a unit. Alternatively the cooker can be hired at 3s. 6d. a month, in which case the current is supplied at ½d. a unit. The rates at Poplar are 16s. in the pound, and we assume that the "novel scheme" for popularizing electricity is to lessen this appalling burden.

The launching ceremony gave Mr. Lansbury the opportunity of handing to electricity one big boost, after which he signed a form asking for the installation of an electric cooker in his own home. In the course of his public-spirited appeal he said: "I want women to hate drudgery in every shape or form, and if machines will wash and iron and clean and cook for you I want you to have them." Has Mr. Lansbury never seen a gas wash-boiler or a gas cooker in the homes of the people?

Mr. Lansbury is an electrical salesman, and he is not the only one of his kind. The Poplar scheme and his remarks should, however, rouse the Gas Industry to more of a fight and make it show its CONFIDENCE. To say, "Naughty Mr. Lansbury," or "Oh, Mr. Lansbury, what shall we do?" will not help the cause of gas. On the other hand, attractive tariffs will.

Attractive Tariffs

ON occasion we have been able to record in the "JOURNAL" the setting on foot by go-ahead gas undertakings of tariffs other than the old flat rate. Some of these tariffs have appealed to us greatly, some we have thought of as indifferent, others, it has appeared to us, as unlikely to cut any ice at all. When the Stretford and District Gas Board, with plenty of experience of attractive industrial tariffs, came along last year with a new domestic tariff we hailed it as a first-class business getter likely to be warmly welcomed by the consumers in the Stretford area. And such it is proving. We mention Stretford because already the working of the new tariff has shown success, and because it typifies what can be done if only we have sufficient confidence in gas service.

It would, perhaps, be a good thing to refresh the minds of our readers with an outline of the Stretford optional two-part tariff, which has the great merit of simplicity. Briefly, the ordinary consumer pays a demand charge of 10s. a quarter, and thereafter is supplied with gas at the commodity charge of 3½d. a therm. At such a low cost he has every incentive to extend his uses of gas in directions he most likely would never contemplate at the standard flat-rate charge of 9½d. per therm. The demand charge for the prepayment consumer is fixed at 24s. a year. As with the ordinary consumer, it is payable in advance, but in eight instalments of 3s. each. Gas is then supplied at 5d. a therm. For those consumers who desire to pay the charge by instalments of 6d. a week (four payments per calendar month) the Board provides an indicating money box which shows the date up to which payments of the

demand charge have been made. An illustration of this money box will be found on a later page.

Now when the Stretford Gas Board decided to adopt this tariff the fact had to be faced that, if all consumers to whom it showed an advantage adopted it without burning any more gas, there would be a loss of revenue of approximately £18,000. Fortunately the Board had confidence, and this gloomy possibility did not act as a deterrent. The scheme took effect at the beginning of the last quarter of 1934, and the results have been so encouraging that Colonel W. M. Carr does not anticipate any loss. Without exception there has been an increase in consumption—so much so that instead of a loss, the Board is likely to make a greater profit. The tariff has been extraordinarily well received by the public, who have been educated to the principle of a standing charge by our electrical competitors. We regard the tariff as a bulwark against competition.

Further recruits to the two-part tariff band are Leicester and Lytham St. Annes. Particulars of the Leicester scheme were published in the "JOURNAL" for Jan. 16, while details of the Lytham St. Annes plan will be found on a later page of the "JOURNAL" to-day. These two tariffs are similar in that the demand charge is based on the number of rooms in the premises, but while the Leicester scheme applies to both ordinary and prepayment consumers, the Lytham St. Annes tariff is applicable to ordinary consumers only. Another difference is that the consumer at Leicester must use gas for cooking to become eligible to participate in the two-part tariff.

The Demand Charge

MORE important to our mind, however, is the difference in the amount of demand charge. At Leicester this is low, rising from 4⅜d. a week when there are two rooms to 7d. when there are seven rooms. An additional 2⅓d. is charged for each room in excess of seven, with a maximum charge of 2s. 4d. On the other hand, the demand charge at Lytham St. Annes commences at 1s. a week for houses with not more than four rooms to 2s. 9d. for houses with more than ten rooms. The flat-rate charge at Leicester is 9·7d. a therm, while at Lytham St. Annes it is 9·524d. Whereas, however, under the two-part tariff the Leicester Gas Department has a commodity charge of 6·6d. per therm, the commodity charge at Lytham St. Annes is only 4d. per therm. This, as we have said, is a very important difference, and we suggest that the salesman has a far better chance of securing added business at the lower commodity charge. To be able to talk about gas at 4d. a therm—or, better still, as at Stretford, 3½d. a therm—is a very different proposition from selling gas at 6·6d. per therm. We would emphasize once again that the public have been educated to the principle of a standing charge. This understood and paid, the consumer does think in terms of cheap gas, which psychologically is of the utmost value and a line of thought we must foster.

A "Free Gas" Scheme

SKILL has to be exercised, of course, in "putting across" new tariffs, and the simple explanation given by the Lytham St. Annes Gas Department is to be commended. On this question of interesting consumers in new forms of rates there is in the current issue of the *American Gas Journal* an account of the "Free Gas" plan of the Florida Public Service Company—a plan "designed to arouse customer interest and to have a powerful sales appeal." With this scheme every consumer benefits immediately if his consumption increases. There are two rates—the existing rate and what is termed an "objective rate" which shows a marked reduction in price per 1,000 c.ft. The objective rate becomes operative when the consumer has burned as much gas at the existing rate in any month as he did in the corresponding month of the previous year, and this rate applies to the whole of the gas consumed. Consequently, for the same bill the consumer, now transferred to the objective rate, can continue to burn gas until he has used as much as he would have had for the same money on the objective rate. In other words, he has a margin of "free gas."

The object of the "free gas" rates is simply to transfer the users of gas from the existing level of use and existing rates to a higher level of use at lower rates appropriate to the consumption. At the same time, the system protects the gas undertaking from incurring grave losses in revenue. Even if such a plan does not immediately result in adding anything to the earnings of the gas undertaking, it places it in a far better position to retain existing, and secure new, business in face of the intense competition of to-day. We do not suggest that American ideas should be slavishly followed in this country, but we do suggest that we cannot afford to sit still.

The Gas Unit

WE have discussed at some length the question of fighting electricity with its own weapon of tariffs, and urged that attack is the best form of defence. It is interesting to note an increasing number of gas undertakings which are going still further and finding it of advantage to adopt the much-discussed unit. For example, the offer of a two-part tariff by Lytham St. Annes, which we quote in our news columns this week, states "less than one-seventh of a penny per unit."

A very interesting feature of this movement is the growing number of undertakings which have specifically adopted the 4,000 B.Th.U. unit, as recent examples of which we can quote Rotherham, Coatbridge, and Swinton and Mexborough, in each of which instances the unit, we believe, followed the introduction of the two-part tariff. In the case of one of these—municipally owned Rotherham—we understand that the electrical interests actually opposed the introduction of the gas unit to the extent of having the Gas Committee's recommendation referred back by the Town Council to a joint Gas and Electricity Sub-Committee. The electricians are reported to have expressed the view that the gas unit would not cause any harm to the Electricity Department, but that, as the word "unit" was an electrical term, they were concerned that the public might be misled by the "gas unit." The Council, however, eventually approved the use of the term "gas unit," and, as reported in our news columns on Jan. 9, Rotherham adopted the 4,000 unit and announced at the same time an extension of the two-part tariff scheme.

No "national" lead on the subject of the unit has been forthcoming since 1931, when, as will be remembered, the National Gas Council Committee on Charges, in conjunction with the Institution of Gas Engineers, put forward recommendations which were approved and adopted by the Central Executive Board and communicated to all members. Since, among these recommendations, it was stated that "in view of all the circumstances a unit of 4,000 B.Th.U. would be the most suitable," it behoves those who are considering the adoption of a unit to give careful consideration to the advantages of one of this size. Mr. Haynes is rightly regarded as one of the progressive spirits of the Gas

Industry, and we were therefore interested to find out from him why he wanted a unit at Rotherham, and what were the particular reasons why he chose the 4,000 unit.

In Support of 4,000 B.Th.U.

THE 4,000 unit, in Mr. Haynes' view, possesses above all the advantage of simplicity. It is a figure easily remembered; it is a simple sub-multiple of the therm; and in its application in many appliances the net amount of useful heat given to the consumer is approximately equal to the heat available from a unit of electricity. A gas unit of 3,412 B.Th.U. is, in his opinion, too open to attack by the electricians owing to the differences in thermal efficiency of gas and electrical appliances. Mr. Haynes reinforces his advocacy by pointing out that most gas fires consume half a unit of 4,000 B.Th.U. per radiant per hour, so that a salesman has a ready means of quoting costs and making comparison with which to meet electrical competition. At Rotherham, where householders can obtain 12 gas units for one penny, the running costs of appliances are easily calculated and compared with those of electricity at only 2 units for a penny. And when all is said and done, the consumer only wants to know the approximate cost of using an appliance, and the difficulty of comparing electrical units at a halfpenny with cubic feet at *xy* pence a thousand or with therms at pence to three decimal places is simplified by thinking of gas in equivalent units costing a simple but small fraction of a penny—even if such a fraction is only approximate.

We have referred to these views of Mr. Haynes because it seems to us particularly interesting that one who has had the chance of longer experience than many of scientific charging should have adopted a 4,000 unit. Knowledge is accumulating, and those who are hesitating will soon have ample data upon which to take their decision. In conclusion, we might quote a little story we heard from Nottingham. Not long ago the local papers published an advertisement, "Central heating at ½d. per unit. Apply to the Gas Department." Our informant relates that as soon as the Gas Office was opened that morning the stream of inquiries began, and already installations have been put to work on gas.

If the unit is going to help us to sell gas, by all means let us get busy with it without delay.

Non-Skid Roads

WHEN we opened our copy of *The Times* of Jan. 22 an article entitled "Non-Skid Roads"—these words in very bold type—naturally claimed our attention, and we settled down to read, as we fondly imagined, something about the virtues of British tar. Nothing of the sort, however. Not one mention of tar throughout the lengthy article, which occupied nearly a column of *The Times*, and which was calculated to give the reader the impression that some startling development had resulted in a type of asphalt road destined to oust all other forms of construction on the scores of economy and safety in meeting modern traffic requirements.

The first chord of the article was the issue by the British Standards Institution last week of a series of specifications to cover the whole field of asphalt road construction; and this chord was the signal for a full-throated song of praise to imported bitumen. A most discordant song.

We learn that "a type of road surface has been evolved which is not only best adapted to modern traffic but is also cheap to make and maintain." What has actually happened is that, after six years, the standard specifications relating to asphalt road construction have been revised. We learn, too, that "the alternating character of road surfaces, due to different types of asphalt construction, will cease, as all such roads will conform in continuous lengths to one pattern." We may be pardoned for mentioning that the new specifications—and "they may not be the last"—cover eleven types of asphalt road construction, and for asking why time was wasted in discussing ten of these. It is all very confusing.

We challenge the sweeping statements made in *The Times* article in question. As to cost, the new asphalt road may be cheap, but the tar-macadam road is cheaper and it is a British, not an imported, product. As to safety, the tar-macadam road, by its very construction, is far superior to an asphalt road. This result has been gained not in haphazard fashion but by long experience of road construction, continuous research, and large-scale experiments, and the production of tars in accordance with British standard specifications. The tar-macadam road relies for its safety-first characteristics on a natural stone surface. The tar acts as a binder, and its adhesive properties render it particularly suitable for all classes of aggregate.

Follow My Leader

VERY wisely the British Road Tar Association, who have done such sterling work in generally improving tar road construction, have placed great emphasis on the fact that a good tar road depends upon a properly balanced mixture of tar and aggregates correctly applied. It is this which has led to the non-skid characteristics of the modern tar road, which is really a stone mosaic held together by the tar. As the tar-macadam road ages, its non-slippery properties tend to increase rather than diminish. In this connection we may again call attention to the striking success of the experimental sections of tar road laid on the Kingston By-Pass under the supervision of the Association and to their specification. This success was mentioned by Sir David Milne-Watson in his Presidential Address at the recent annual meeting of the British Road Tar Association. That the sections have proved adequate to the needs of traffic averaging as much as 12,000 tons a day is fully borne out by the fact that in their four years of life they have required no maintenance whatever and have not had a penny spent on them. That they are safe is clearly shown by the statement in the Ministry of Transport's recently issued Experimental Roads Report that the non-skid properties of one section are comparable with those in the autumn of 1931, a year after it was laid.

Perusal of the specifications so admirably boosted in the article in *The Times* shows that the bitumen and asphalt interests are depending not on bitumen and asphalt, but on pre-coated stone chippings, to provide the roughened surface necessary for safety. The main plank of the asphalt interests has been the durability of the asphalt road. Those responsible for the sale of British road tar will, we hope, watch closely the effect of the new specifications to see whether methods of asphalt construction have so much improved that it is possible to achieve the maximum of safety without loss of durability. Our opinion is that the asphalt interests cannot have it both ways.

During the last few years there has been a heavy reduction of expenditure on the roads, but relatively to other road materials the sales of road tar have improved. And, in view of the fact that approximately double the quantity of British tar is put on the roads of this country annually to that of bitumen, the statement in the article

that bitumen is the chief binding agent is not a little misleading. The writer of the article on "Non-Skid Roads" has surely distorted the view of the situation.

Interesting Our Consumers

THE value of contacts with local Associations of all kinds is constantly being brought home to us, and a column in a recent issue of the *Hastings and St. Leonards Observer* emphasizes it once again. "Light in Business" and "Finest Trade Bait Ever Discovered" were the bold headlines to a report of an address to the local Grocers and Provision Merchants' Association, in the course of which some very sound advice was given to the members. Careful thought, said the lecturer, should be given to the efficient and correct lighting of a shop interior and window, and properly installed it became an asset that could not be measured. A much greater number of people had time in the evening than in the day time to inspect shop windows if they were sure they were well lighted, and absence of lighting after business hours meant sacrificing one of the finest and cheapest forms of advertising.

The Deputy Borough Electrical Engineer, who was the lecturer, gave a great deal of other sound advice, including the danger of having installation work done at cut prices which might be very false economy, the importance of investigating the price advantages to be derived from the two-part tariff, and so on. According to the report before us there was no mention of gas. We should not expect it, because presumably it is part of the job of Deputy Borough Electrical Engineers to sell current, and it is more in keeping with their municipal dignity completely to ignore the existence of gas than to decry it. We do not complain. We only urge every gas undertaking never to lose an opportunity of addressing organizations of local citizens on topics which affect their welfare in any way. Gas can nearly always help. We take it for granted as a preliminary that we all heartily agree with, and apply to our own premises, the view of the Deputy Borough Electrical Engineer that "Provided the goods are *arranged in an attractive manner, effective lighting*, properly applied, is the finest trade bait ever discovered by man." The italics are our own.

The "Bulletin"

THE Industry will have observed, as we have done, what a very live publication the British Commercial Gas Association makes of its *Bulletin* nowadays. The January issue reached us just after going to press last week, and we take this first opportunity of wishing the Association every success with a new volume.

With the current issue there is inaugurated a "Home Service" supplement for the women's staffs of gas undertakings, which, it is hoped, will become a regular feature of much value. Much of the credit for the launching of this new venture is due, we expect, to Mrs. Eileen Murphy, Chief of the Home Service Section, who has set the ball rolling in response to many requests from demonstrators and saleswomen for a news-sheet especially devoted to the exchange of ideas and information among the women's staffs. Mrs. Murphy emphasizes, however, that she does not want to have to "run" this news-sheet; and whether it will be possible to continue it or not depends entirely on each reader, who becomes herself one of the editors, and who is relied upon to send up regular contributions of interest. As Mrs. Murphy says, there will be no payment in cash, but untold wealth in knowledge. By such means, this little news-sheet will continue for the time being as a supplement to the regular *Bulletin*, though additional copies will, of course, always be available for wider distribution. Then, perhaps some time in the future—if its increasing popularity and value warrant it—it may launch out on its own as a separate publication for the benefit of the women of the Industry. In the meantime, however, it will be welcomed as one more B.C.G.A. service to their subscribers.

CORRESPONDENCE

Small Domestic Coke Boilers

SIR,—May I respectfully draw attention to the report of the Address I gave in opening the discussion on "Automatic Control for Gas and Coke-Fired Boilers" at the Institute of Fuel on Dec. 13 last? Your report ["JOURNAL," Jan. 16] states that for the small domestic boiler the saving in labour only would be effected, from which the reader might perhaps assume that there is no saving in fuel.

I attempted to make it clear at the meeting that, while the saving in fuel was in fact a very substantial one in some 30 or so installations which we now have under close observation, the actual cash value of the fuel saved on an installation burning 2 or 3 tons a year is small, and it is difficult on this score alone to justify the capital cost of the installation, particularly where the equipment is fitted to an existing installation rather than to a new one. The householder usually likes to see his money back on this type of equipment in a year or two at the most. I therefore stressed the fact that a saving in labour and added convenience alone would, in several cases, justify the fitment of automatic controls to small domestic boilers, and suggested that, following suitable education, this would be the most effective method of popularizing the control with the general public.

Yours, &c.,
F. M. H. TAYLOR.

The Gas Light and Coke Company,
Coke Department,
Technical Section,
Jan. 28, 1935.

"Windows that Ruin Showrooms"

SIR,—I read with great interest and attention the article by "Quidnunc" in your issue of Jan. 16 on "Windows That Ruin Showrooms."

If your contributor's strictures are merited, and my own perhaps limited experience does not lead me to contradict him, I believe that the importance of his article cannot be exaggerated (although I must cite the notable exception of the display at present to be seen at British Industries House, Oxford Street, which, to my mind, is wholly admirable, save in certain minor details).

There can be no doubt that (in the words of your contributor) "a tawdry, inept, or tasteless window display" will suggest to the passer-by—consciously or sub-consciously—products and service that also are tawdry and inept. Conversely, display that is æsthetically impeccable, and bears the hall-mark of distinction and *expertise*, will suggest the like attributes to the Industry's production and service. For it must be borne in mind that the public to-day—and especially the younger generation of the public—has become vastly more knowledgeable and critical in matters artistic and is very quick to note a display which is amateurish or old-fashioned.

Your readers will learn, therefore, with interest that the whole question of display has recently received much consideration by the appropriate authorities in the industry, who are fully alive to the enormous sales value of display.

One of the immediate results of this is the course, recently begun at the Westminster School of Art, on "Design as Applied to Display." This course sets out to teach the fundamental principles of design and composi-

tion, and particularly the characteristics of *contemporary* design and style and their application to window and showroom display. These lectures and practical classes, conducted by Mr. Elmslie Owen, R.B.A., an artist of real sensibility, are being held weekly and are attended by representatives of the several gas undertakings in and around London.

Too often, in the past, the responsibility for window display has been entrusted to unqualified people with little or no training. It cannot be too strongly emphasized that the creation of outstanding and distinguished display demands high qualifications. It requires a wide knowledge of art—particularly of contemporary art, "flair," and training. In other words the expert and specialist. For the Gas Industry can no more afford nowadays to be mediocre in matters of display than it could afford to be mediocre in matters technical and scientific.

It is my belief and hope that this course will prove a most effective remedy for those faults to which "Quidnunc" draws such timely attention.

Yours, &c.,
R. KIRKLAND JAMIESON,
Headmaster,
Westminster School of Art.

L.C.C. Westminster Technical Institute,
Vincent Square, S.W. 1,
Jan. 28, 1935.

"Colouring Gas Appliances"

SIR,—In your issue of Dec. 19, I notice a supplementary note from Mr. W. A. Lowe, of Messrs. Donald MacPherson & Co., Manchester, relative to the above subject, and I feel quite sure that Mr. Lowe does not intend to convey that any stove enamelled finish is equal as regards durability to vitreous enamel. I quite agree that many of the synthetic colours used in finishing cookers produce a finish which looks remarkably well while the cooker stands in the showroom window, but it cannot possibly be compared with a vitreous enamel finish after it has been in service for two or three months.

The deleterious effects of the emissions from the oven during the cooking process would very definitely attack any synthetic finish, stoved or otherwise, and will, indeed, in the course of time, attack even vitreous enamel unless it is of the acid-resisting variety.

I feel that statements such as the one alluded to—namely, "that the finish is on a par with vitreous enamel"—or, as I have seen advertised, "A synthetic enamel equal to vitreous," are only likely to be damaging in the ultimate reactions to the manufacturers.

Yours, &c.,
MEMBER, I.V.E.

Jan. 21, 1935.

A Question of Morals

SIR,—Your editorial in last week's "JOURNAL" under the heading, "Immorality in the Gas Industry?" makes interesting reading. You clearly define your attitude in regard to hire-purchase facilities for the benefit of the Industry and its consumers.

Indeed, Sir, you would appear to have your views supplemented in no uncertain manner by the inclusion in the same issue of advertisements which make one pause to consider the moral tone of your paper.

The example on p. 168 may be deemed a "classic," but little is needed to allow it to "fall" into impropriety. The other, on p. 210, leaves one uncertain whether the advertisement is of the Ball(y)et Feet, the Ball(y)et Girls, or the Ball(y)et meter. Are the originators of these advertisements members of the "Bright Young Set?" This method of brightening-up the "JOURNAL," if it develops, may result in the advertisements becoming the great "feature," but what about the morals of the Industry?

Yours, &c.,
"SEDATE."

Jan. 28, 1935.

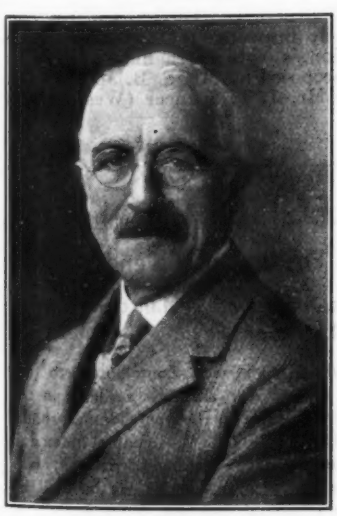
[It was, of course, only after the gravest consideration and with the consent of the Board of Censors that we allowed the advertisements to which our correspondent refers to appear in the "JOURNAL." Even so, we had our qualms—justified, it seems.—ED. "G.J."]

PERSONAL

A Notable Jubilee at Northampton.

On Friday evening, Jan. 18, the Directors of the Northampton Gaslight Company gave a Dinner to their Engineer and Manager, Colonel G. S. Eunson, to mark the completion of his 50 years' service with the Company.

In addition to Colonel Eunson, those present included Mr. F. Bostock (Chairman), Mr. J. J. Martin, Major A. E. Ray, Mr. L. Bostock, Mr. S. C. Adnitt, Mr. F. Ince-Jones, Mr. W. H. Percival, Mr. E. H. Harries-Jones, Mr. T. E. Manning, Dr. A. W. Cooke, Mr. B. Faulkner (the Solicitor), Mr. H. Banks (Assistant Manager), and Mr. F. J. Alsop (Secretary). Mr. F. Bostock presided.



Colonel G. S. Eunson.

In 1845 Colonel Eunson's grandfather was appointed Consulting Engineer to the Company, he being at that time the Engineer of the Wolverhampton Gas Company with an extensive private practice. In 1854 Mr. John Eunson (Colonel Eunson's father) was appointed Engineer and went to live in the town at that time. He held this office until his death in 1911, a service with the Company of 57 years. Colonel Eunson was appointed Assistant Engineer and Manager of the Company in 1889, and at his father's death in 1911 he was appointed Engineer, making up to the present time an unbroken family connection with the Company of over 90 years.

The Chairman, in proposing the health of Colonel Eunson, referred to the very cordial relationship which had always existed between the Directors and their Engineers, which had contributed in no small degree to the continued success of the Company. He congratulated Colonel Eunson on having completed 50 years and asked him to accept as a personal gift from the Directors, Mr. Faulkner, Mr. Banks, and Mr. Alsop, a silver tea and coffee service, with the hope that he would be spared for many years to continue his connection with the Company.

Colonel Eunson, in returning thanks, referred to the great kindness and help which had always been given to his predecessors and himself on every occasion and stated how very much he appreciated the personal regard which he knew went with the gift. He drew attention to the fact that the first gas cooking stove was made and used in this country by Mr. Sharpe, who was then Works Manager at Northampton Works. During his 50 years there had been very great developments in gas manufacture and distribution, including the prepayment system, incandescent lighting, gas fires, and water heating. He also referred to the long-distance distribution of gas to villages in the county—a forward policy of the Directors, resulting in a boon to the consumers and a financial success to the Company. Several of the smaller gas undertakings in the county had been acquired by the Northampton Company, some of which had been linked up and the supply of gas taken from Northampton, thereby giving a cheaper and better service.

Mr. John Martin, in proposing the health of the Chairman, stated that he had one further record to mention. Mr. Bostock had been a Director of the Company for 37 years. His father was a Director before him, and with his son Mr. Lance Bostock now on the Board this completed a record of three generations of Bostocks as Directors.

* * *

We understand that Mr. R. H. BUXTON, the Mechanical Engineer to the Wandsworth and District Gas Company,

has lately been given the additional appointment of Marine Superintendent and will now deal with all routine matters relating to the maintenance of the Company's ships. This appointment was previously held by Mr. C. M. Croft, the Chief Engineer and General Manager, who, owing to pressure of business, is no longer able to give time to routine shipping matters.

* * *

Mr. M. E. RAMPLIN, Distribution Superintendent to the Morecambe and Heysham Gas Department, whose appointment as Assistant to the Chief District Superintendent at Stoke-on-Trent was recently noted in these columns, was the recipient of an inscribed clock and leather travelling compact from the Morecambe and Heysham staff upon leaving to take up his new position. Mr. J. W. Barratt, Engineer and Manager, paid tribute to Mr. Ramplin's work during his three years with the Department.

* * *

Mr. A. H. NICHOLSON, who has resigned his position as Technical Assistant at the Darlington Corporation Gas Department to become Assistant Engineer and Manager to the Bingley Corporation, was presented with an attaché case by the staff at Darlington. The presentation was made by Mr. A. E. Ruffhead, the Engineer and Manager. Mr. Nicholson was also presented with an inscribed fountain pen by members of the showroom staff.

* * *

A pleasing little ceremony took place last Friday at the meeting of the London and Southern District Junior Gas Association, when the President, Mr. F. C. Smith, of the Gas Light and Coke Company, presented Mr. H. G. SOAR, on behalf of the Council and members, with a token of their appreciation of his services to the Association. Mr. Soar has been Hon. Treasurer of the Association for the past ten years.

In making the presentation, Mr. Smith said that, as they knew, this Association had over 500 members and 60 to 70 student members. The control of the finance of such a body was the work of the utmost importance, which Mr. Soar had conducted with zeal and efficiency. He had endeared himself to them all by his genial personality and by his readiness on all occasions to promote the well-being of the Association. Mr. Soar was a man of many activities; some of those present knew of his work on behalf of their great London hospitals; the value of this humanitarian work could not be over-stated. He must add that Mr. Soar had no intention of relinquishing the post which he had occupied for so many years in connection with their Association; but they felt it a kindly thought to acknowledge in some small way his work while he was still in the midst of his activities.

Mr. Soar, in acknowledging the presentation, said how much he appreciated this gift, which would always be a reminder to him of the very happy times he had had with them. He was always pleased to do anything he could for the Association, and his reward lay in the many friends he had made among the members of the Association.

Obituary

The death occurred on Jan. 25, at the age of 62, of Mr. JOHN DUNCAN, Manager of the Meter Section at the Wall Street Depôt, Glasgow. Mr. Duncan spent 38 years in the service of Glasgow Corporation Gas Department. Keenly interested in music, he was founder of the Glasgow Gas Department Band and acted as their representative on various musical bodies.

* * *

The death has taken place at the Union Bank House, Stranraer, of Mr. THOMAS M. HUNTER, Solicitor and Bank Agent, who besides holding numerous public appointments was a Director and Secretary of the Stranraer Gas Company, Ltd. Deceased was 56 years of age.

* * *

The death took place last week of Mr. CHARLES J. FRASER, for many years Clerk and Treasurer to the East Linton Gaslight Company.

News in Brief

For Gas-Works Extensions, the Thornton Cleveleys Urban District Council have received the following sanctions from the Ministry: £580 for 15 years, £7,092 for 30 years, and £1,397 for 20 years. The Board of Trade have expressed willingness to include Carleton within the Council's area of supply.

Commercial Gas Company's Dividend.—The Directors of the Commercial Gas Company at the Annual General Meeting on Feb. 21 will recommend a final dividend of 3% less income-tax on the ordinary stock of the Company, making, with the interim dividend of 2½% paid in August last, 5½% for the year to Dec. 31, 1934. The dividend for the previous year was at the rate of 5¾%.

Dividends for the past half-year to Dec. 31 will be recommended by the Directors of the Gas Light and Coke Company at the following rates: On the 4% Consolidated Preference Stock at £4 0s. 0d.% per annum, on the 3½% Maximum Stock at £3 10s. 0d.% per annum, on the Ordinary Stock at £5 12s. 0d.% per annum, carrying forward to the next account the sum of £183,068 4s. 5d.

"'Time is Money,' it is said, but it is actually an economy in hard cash to use air routes for long-distance engagements." We were told this by Mrs. Eileen Murphy, Chief of the Home Service Section of the B.C.G.A., describing a lecture engagement in Belfast, which she fulfilled by flying from London. As a practical proof that an entire meal can be cooked in a modern gas cooker without any attention from the housewife, Miss E. Crawford placed a complete dinner in the oven to cook while Mrs. Murphy addressed an enthusiastic audience.

Irish Free State Trade Returns for the month of November just issued show imports of coal for gas-making purposes of a value of £17,735 as against £16,698 for the corresponding month of the previous year, making for the eleven months from January to November a total of £190,494 as compared with £206,020 for the first eleven months of 1933. Imports of cast gas pipes and fittings for the month reached £3,614 as against £2,388, making for the eleven months £27,415, as compared with £23,104. Coke was imported for the month valued at £2,058, making for the eleven months £25,398, while for the month the country's exports of coke reached £2,328, making for the eleven months £25,856.

Sixty New Houses now being erected by the Fife County Council are to have switch-operated gas lighting throughout as a result of the enterprise of the Kelty Gas Company, Ltd. The houses also include a gas cooker and wash boiler and bring the total number of such houses to 275.

A Visit to the Gloucester Gas Light Company was paid on Jan. 26 by members of the Western Junior Gas Association. The visitors were welcomed by Mr. W. S. Morland, Engineer and Manager, and were shown round the gas-works, after which they were entertained at tea by the kind invitation of the Chairman and Directors of the Company. They subsequently inspected the Company's showrooms, and, in conclusion, a vote of thanks to Mr. Morland and his staff was proposed by Mr. S. B. Jones (Clevedon), and supported by Mr. J. T. Spencer (Weston-super-Mare).

GAS LEGISLATION

A Summary of the Position at the end of 1934

By George Evetts, M.Inst.C.E., M.Inst.Gas E., M.Inst.Cons.E.

The striking articles which Mr. Evetts contributed to the "JOURNAL" at the end of last year are now available in the form of a handy book, in similar style to the very popular annual "Technical Signpost" to the "JOURNAL." A general index and marginal annotations make reference easy, and from the many inquiries received while the articles were running, we believe the publication will find a very general welcome from Boards of Directors, Company Secretaries, Municipal Officers, and in many other quarters.

From the "JOURNAL" Office—
pp. 51, bound in cloth, 3s. 6d. net, postage 3d.
Six copies and over, post free.

The **Seventh Annual Dinner** of the staff and employees of Huddersfield Corporation Gas Department took place on Jan. 25. There was an attendance of 120, including 25 former employees retired on superannuation at 65 years of age. Mr. Thomas Dyson, Works Superintendent, presided, and the evening was entirely one of a social nature, without speeches. The oldest veteran present was Mr. Joe Bland, aged 86, who was a lamp-lighter for over 60 years, and retired ten years ago long past the age at which the superannuation scheme now applies.

Collecting the Service Charge

Under the optional two-part tariff for prepayment consumers at Stretford the demand charge, known as the "gas service rental," is payable in advance, in eight instalments of 3s. each. Gas is then supplied at 5d. a therm. There is an interesting alternative method of collecting the service charge. For those consumers who desire to pay the charge by instalments of 6d. a week (four payments per calendar month) the Stretford and District Gas Board provides an indicating money box which shows the date up to which payments have been made. The money box, which is illustrated here, is very neat and compact, measuring only 3½ in. by 5 in. After insertion of the 6d. the knob is turned to the left, and this movement actuates the date indicator. The box is manufactured by the Gas Meter Company, Ltd.

Alkali, &c., Works Order

By the Public Health (Smoke Abatement) Act, 1926, power is given to the Minister of Health to make Orders extending the provisions of the Alkali, &c., Works Regulation Act, 1906. In the exercise of this power an Order was issued in 1928 (the Alkali, &c., Works Order, 1928) extending the list of noxious or offensive gases mentioned in the Act of 1906 and extending the list of scheduled works requiring registration under the Act. A draft Order has now been prepared further extending the list of such gases and works.

Copies of this draft Order may be seen at the Offices of the Ministry of Health, Whitehall, London, S.W. 1, or they may be purchased either directly, or through any bookseller, from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2.

A Public Inquiry will be held into the subject matter of the draft Order by Mr. W. A. Damon, Chief Inspector, Alkali, &c., Works, at the Offices of the Ministry of Health, Whitehall, London, S.W. 1 (St. James' Park Entrance, Office of Works), on Wednesday, Feb. 6, at 11 a.m.

Any person interested in the subject matter of the Inquiry may attend and give evidence.

The Institution of Heating and Ventilating Engineers

Birmingham Branch Visit Wellington Tube Works

On Wednesday, Jan. 23, members of the Birmingham and District Branch visited the Wellington Tube Works at Tipton, Staffs. Mr. D. W. Turner, Chairman and Managing Director, was unavoidably absent, and the members were welcomed by Mr. J. T. White, Director and General Manager, Mr. W. H. Nock, Director, and Mr. T. Salt, Sales Manager.

An interesting time was spent in witnessing the manufacture and fabrication of tubes and fittings, and various tubular specialities for which this firm is well known. The visitors also went through the "Weldex" Heater Department of an associated firm, the Victoria Tube Company, Ltd.

After the inspection of the Works refreshments were taken in the main offices when Mr. E. A. Couzens, President of the Branch, thanked the Directors and Staff for what they had done to make the visit so interesting and enjoyable. Mr. J. T. White suitably responded.

Glasgow Corporation Sued

Royalties for Maclaurin Process

Sheriff Bartolomew, of Glasgow, has found in favour of the pursuer in an action in which Robert Maclaurin, of Homesteads, Stirling, inventor of the Maclaurin Smokeless Fuel Plant, sued the Glasgow Corporation for royalties unpaid for 1925, 1926, and part of 1927.

Glasgow Corporation Gas Department refused payment on the grounds that they had not made any agreement with the inventor, or that if they had done so, there was an understanding that no royalties were to be paid till the plant was functioning properly.

In his interlocutor the Sheriff finds that there was a definite agreement in 1915 to pay a royalty on every ton of coal carbonized by the Maclaurin process; that there was never any alteration or modification in this agreement and that the plant erected, which started working in 1925, fulfilled the promises made for it from the beginning. He therefore found Glasgow Corporation liable to pay the royalties asked for, with interest from the date of the action being raised. The plant cost £48,000 to erect.

Forthcoming Engagements

January.

31.—B.C.G.A.—South-Western District Meeting, Exeter.

February.

5.—I.G.E. Research Executive Committee, 2.30 p.m.

6.—Manchester and District Junior Association.—Visit to Messrs. Parkinson & Cowan's Meter Works, Stretford, and Paper by Mr. W. Hodkinson.

7.—Midland Junior Association.—Meeting and paper by Mr. A. Knight.

9.—Western Junior Association. — Meeting at Bridgwater.

9.—Scottish Junior Association (Eastern District). Visit to Leven. Paper by Mr. C. L. W. Berglin.

9.—Scottish Junior Association (Western District).—Meeting and paper by Mr. T. R. Sawers.

11.—I.G.E. General Purposes Committee, 3.15 p.m.

12.—I.G.E. Council Meeting, 10 a.m.

13.—Coke Salesmen's Circle.—Meeting at 28, Grosvenor Gardens, 2.30 p.m. Paper by Mr. S. C. Fox, of Tottenham.

14.—B.C.G.A.—Midland District Meeting, Birmingham.

15.—London and Southern Junior Association.—Meeting and paper by Mr. P. F. Scarth.

16.—Wales and Monmouthshire Junior Association. Meeting at Port Talbot. Paper by Mr. West.

16.—Yorkshire Junior Association.—Meeting at Barnsley. Papers by Messrs. V. J. J. Siddons, R. H. McCulloch, and A. Pickard.

21.—B.C.G.A.—South Wales District Meeting at Cardiff.

21.—S.B.G.I.—Council Meeting, 2.30 p.m.

Fire at Wapping Gas-Works

Engineer's Official Statement

Our readers will doubtless have seen in the Daily Press the somewhat alarming reports which appeared in connection with the "explosion" at the Wapping Works of the Commercial Gas Company last Saturday.

The collapsed scrubber which caused the fire.

We have ascertained the true facts of the mishap. Mr. A. E. Williams, Chief Engineer of the Company, states that the fire occurred about midday on the Saturday, as the result of the collapse of a tower scrubber owing to some settlement or defect of the foundations, the cause of which has not yet been ascertained. The scrubber in falling broke a 15 in. gas main which was supported on the wall of the valve room, and the gas from this main ignited. Our photograph shows the scrubber after its collapse.

Although all flow of gas was quickly shut off on the Works side, the flames from the fractured end of the 15 in. pipe made it impossible to reach the valve dividing this main from the outside distribution system and gas from the district mains continued to flow back and burn at the fracture. It was necessary to open up and cut off four mains in the streets surrounding the Works before the flames could be extinguished, and this work was completed on Sunday morning. Gas-making has had to be suspended temporarily at the Wapping Works, but it is hoped to resume work in the course of a few days. A full supply of gas to the district has been maintained throughout from the other Works of the Company.

Fortunately, adds Mr. Williams, no person sustained any injury with the exception of one fireman who fell into a liquor tank and whose eyes were temporarily affected by the ammonia. Structural damage is confined to the scrubber and the plant in its immediate vicinity.

New Industrial Scale at Newton-in-Makerfield

The Newton-in-Makerfield U.D.C. Gas Department have offered the following new scale of gas charges for industrial load:

	Per 1,000 C.Ft.		Per Therm.
	s.	d.	d.
First 500,000 c.ft. per quarter	2	4·5	6·6
Next 250,000 ,, ,, ,,	2	2·6	6·1
,, 250,000 ,, ,, ,,	2	0·7	5·7
,, 1,000,000 ,, ,, ,,	1	5·1	3·9
,, 1,000,000 ,, ,, ,,	1	4·1	3·7
,, 1,000,000 ,, ,, ,,	1	3·2	3·5

Generation of Electricity by Town Gas

Melbourne Contract

The Mackay Harbour Board have entered into a contract with the Gas Supply Company, Ltd., of Melbourne, for a supply of gas to generate electricity in connection with the construction of the new Outer Harbour.

The prime movers will be engines running on town gas, the largest engine being 300 B.H.P., this amount of power being required during the construction period. After the Harbour is completed, approximately 75 H.P. will be required.

The Harbour works are 3¼ miles from the Gas-Works and the Gas Company will transmit the gas at high pressure, provision being made for high-pressure storage at the Harbour Board site.

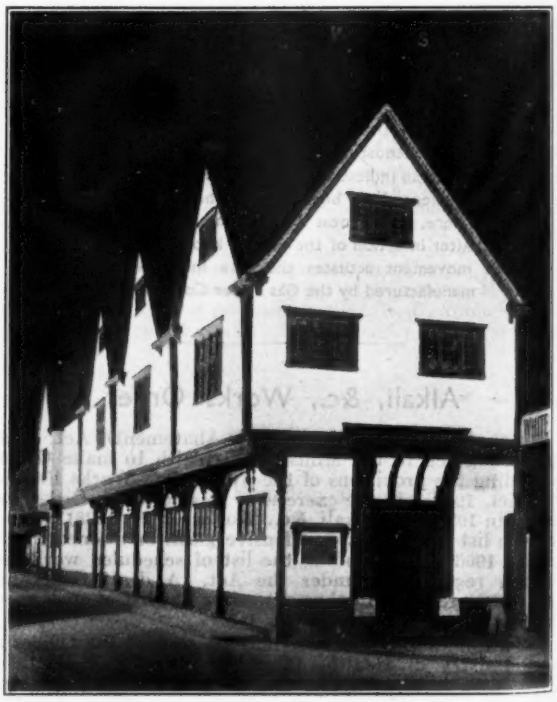
Belfast Gas Department

Contributions to City Hall Charges

The Chairman and Deputy Chairman of the Belfast Finance Committee and the City Treasurer waited on the Belfast Gas Committee at its last meeting and requested the Committee to continue the practice of contributing from the profits of the Gas Undertaking the amount of the interest and Sinking Fund charges on the City Hall, totalling £11,400 per annum, and also, in view of the exceptional demands of the Government, to make a further contribution to the City Fund of £11,000.

The Committee recommended the Council to approve of the request, subject to the amount being available out of the profits of the Gas Undertaking, and on the understanding that the special grant to the City Fund will not be taken as creating a precedent. Over £22,000 out of gas profits have been devoted annually to kindred purposes in the past five years. Between £300,000 and £400,000 has been paid by the Gas Department in the last forty years to meet City Hall charges.

Effective Gas Floodlighting at Newbury



We are indebted to Mr. J. P. Thompson, Engineer and Manager of the Newbury Corporation Gas Department, for the above photograph of the excellent floodlighting undertaken by his Department of the old Cloth Hall, Newbury. The lighting has been effected by seven 1,200 candle-power lamps, and it is understood that at the current price of gas in Newbury the running cost of the installation works out at the remarkably low figure of less than 6d. per hour.

G.D.A. for Women, No. 1 Centre, Halifax

The First Year's Work Reviewed

Home Service continues a live topic in the Industry, and in referring to it we have on several occasions given particulars of the activities of the G.D.A., Halifax. We are now able to congratulate its founders upon the completion of its first year of existence, and upon the production of a very interesting Annual Report, for a copy of which we are indebted to Mr. W. B. McLusky. Incidentally, we learn from the *Halifax Courier and Guardian* that the First Annual Gathering of the Branch held recently was "a party to suit all tastes, an apt party for the people who support the Gas Industry which caters for all." The guests numbered 160; there was bridge, whist, dancing, and a cabaret show; and (a real touch of genius, we consider) the first ladies' prize for bridge was an electric hairbrush! There is no petty prejudice in the Halifax G.D.A.

Much interesting detail is given in the Annual Report, which opens with the simple statement that "it is exactly a year ago since we Halifax women decided to form a Gas Development Association in order to learn more about the manifold uses of gas." To learn—not to teach or sell—seems to us an excellent beginning for an association which aims at receiving general support. And, from the succeeding pages of the Report we find full accounts of how the learning was pleasantly interspersed through a series of regular monthly functions, which included visits to the York Flower Show and to a model margarine works, a trip to Harrogate to help inaugurate a G.D.A. branch there, an afternoon at Settle to support the opening of a local gas exhibition, an inspection of Mr. Shapley's fine Service and Distribution Department at Leeds and of Messrs. Hailwood & Ackroyd's glass works at Morley, and a joint meeting with the Harrogate G.D.A. at Messrs. Wilsons & Mathiesons' Works in Leeds. Other monthly sessions were held at the Halifax gas showrooms, where Lectures and talks were given—not by any means exclusively confined to gas matters, though we notice that "a tempting tea with cakes, scones, &c., baked in the gas ovens" frequently concluded a very pleasant meeting. On two occasions the Association had the support of Mrs. Eileen Murphy, of the B.C.G.A., as will, we feel sure, any branch which springs from local keenness in any other town.

Halifax is fortunate in the enthusiasm and the "faith" of Mr. and Mrs. McLusky—the latter acts as Hon. Treasurer of the Branch—to which was undoubtedly due much of the success of the first year's working. Alderman J. H. Waddington, Chairman of the Gas Committee, is also an ardent supporter, with Mrs. Waddington as Chairman of the Committee. Last year's President was the Mayoress, Mrs. F. Austin Leach, and this year Mrs. Laurie Lightowler, the Mayoress, has consented to act in that capacity.

Councillor Mrs. M. Lightowler, the first lady Mayor of the Borough, is also a Vice-President.

Such enthusiasm as is disclosed in the Report "to learn more about the manifold uses of gas," under such leadership, can surely not fail to be of benefit to the Industry. We trust we may be able at this time next year to extend congratulations to branches in many other parts.

A Memorable Gathering at Altrincham

A memorable social gathering of members of the office staff and works employees of the Altrincham Gas Company was held in the new showrooms last week. Mr. C. H. Syers, Chairman of Directors, presided, supported by Mr. J. Grahame Harris, Deputy Chairman; Mr. A. E. Potts, Managing Director; Mr. D. Stanley Morrison, Mr. A. P. Hill, and Mr. W. W. Ashley, Directors; Mr. H. R. S. Williams, Engineer and Manager; Mr. A. H. Robson, Secretary and Accountant; and Mr. J. Robinson, former Secretary.

The Chairman announced that the Directors proposed making an innovation by giving certificates to those whose service extended over twenty-five years, and accordingly he made a presentation to fifteen employees. Among these was Mr. E. Roberts, who had completed fifty years' service in the Company, and in addition to his certificate, Mr. Roberts was the recipient of gifts, not only from the Directors, but also from his colleagues on the office staff, as mementoes of his long service.

Another feature of the evening was a surprise presentation to the Engineer and Manager, Mr. H. R. S. Williams, of a gold fountain pen, from the office staff and the workshop and works employees, as a token of their appreciation.

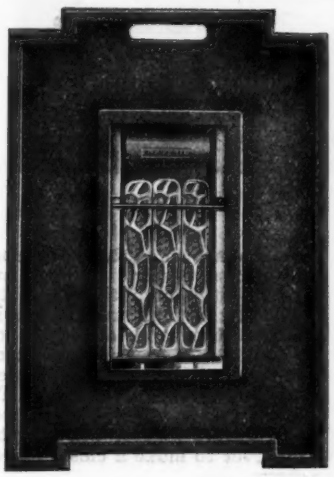
Sassoon House, Peckham

In our article on Dec. 5 last describing "Smokeless Flats for the Artisan"—being an account of the South Metropolitan Gas Company's installation at Sassoon House, Peckham—we regret that we were misinformed as to the venting of the coke fire, the multi-point heater, and the wash copper to the roof of the building.

We now learn that the asbestos cement flue pipes supplied for Sassoon House were specified by the architect as "Everite," and that "Everite" pipes were used throughout.

"Everite" is of course a trade name indicative of the flue equipment of Turners Asbestos Cement Company.

A New Portable Fire



The portable gas fire just introduced by Messrs. R. Russell & Sons, Ltd., of Derby, is a pleasing model. It is called the "Peveril," and, being light in weight, can be carried easily from room to room as required. It measures 21¼ in. high by 15 in. wide, and is supplied in blue, green, bronze, and antique silver finishes with chromium-plated rail. This model has three standard size radiants, and is of particularly neat appearance.

A Communique from the International Gas Union

A meeting of the Bureau of the International Gas Union was held under the Chairmanship of Monsieur A. Baril, President, on Saturday, Dec. 15, 1934, at the head offices of the Union, 21, rue Blanche, Paris.

Besides M. Baril (France), the following were present at the meeting: Mr. F. Escher (Switzerland), Honorary President; Messrs. H. Müller (Germany), M. Böhm (Italy), Brender à Brandis (Netherlands), Vice-President; Mr. J. R. W. Alexander (Great Britain), representing Mr. C. Valon Bennett, Vice-President; and the General Secretary, Mr. P. Mougin.

After having settled a certain number of administrative questions, the Bureau examined with satisfaction the printed version of the report of the Zurich Congress. In this connection, they paid tribute to Mr. Hon. President Escher, to Mr. Zollikofer, General Secretary of the Société Suisse de l'Industrie du Gaz et Des Eaux, and in general to the services of this Society. The Bureau examined the financial situation of the International Union, and decided that funds should be transferred to the corresponding Bank of the Credit Suisse at Paris.

The Bureau discussed the programme for the work to be carried out in the coming years, and, primarily, that part of the programme which resulted from the questions already studied and reported at the Zurich Congress. In this connection, it was decided to institute Committees for pursuing the study of the reports presented by the German, French, and Swiss Associations. Each Committee should be presided over by a member of the Council.

The Bureau noted with pleasure the declaration made by the Association des Gaziers Belges to the effect that they would pursue the study of the question, in connection with which they had already assembled useful information.

The Institution of Gas Engineers of Great Britain having concluded their report with a resolution proposing that all the publicity literature of the Gas Industry should be communicated to the other nations, the Bureau decided to request all the national Associations to carry this resolution into effect.

The Bureau decided that the next plenary meeting of the Council should be held on Saturday, May 4, 1935, at Paris.

NEW SHOWROOMS AT GLASGOW

To the skirl of bagpipes, and in true Scottish style, Glasgow's new Gas Showrooms in Sauchiehall Street were opened last Friday by the Lord Provost of Glasgow, the Rt. Hon. Sir Alexander B. Swan.

The Main Entrance.

Glasgow's new Gas Showrooms, at 522, Sauchiehall Street, are typical of the progressive spirit which is animating this Department of the City's activities. Situated as they are in one of the busiest thoroughfares, at a point where tramcars and 'buses halt, thousands of people pass the premises every hour, and it is reasonable to expect that many hundreds will find them to be a very convenient place of call in order to "Get up-to-date with Gas." The arresting frontage will compel the attention of the passer-by and an interesting topical window display will heighten the interest and lead the observer to make a closer inspection of the interior of the showrooms.

The frontage is notable for the advertising value of the word "GAS" in bronze letters, 6 ft. high, on the polished Hoptonwood stone facia, lit at night by two ornamental lanterns and a continuous overhanging cornice gas floodlight. A well designed centre feature of the upper window incorporates the Coat of Arms of the City in bronze and enamel.

The showroom window is level with the street and the display can be set to depths of 6, 9, or 12 ft. to suit special circumstances, or, if desirable, the whole showroom to a depth of 90 ft. can be viewed from the street, and a slow-speed revolving turntable flush with the floor in centre of window will provide a useful feature for demonstration.

Pipe ducts are provided on both sides of the showroom with cross connecting ducts, the covers for which are made in small sections 15 in. by 15 in. each. It is possible to erect an appliance almost anywhere in the showroom with the certainty that vertical connections can be made direct to the gas, water, ventilating, telephone, or other services which are contained in the ducts, thus avoiding unsightly connections.

Gas appliances can be seen in use for demonstration purposes, divided into domestic, industrial, and catering sections.

A Cinema Screen.

The demarcation between the sections is contrived by means of a large curtained opening in which a cinema screen can be lowered from the soffit and films projected on to it for demonstration purposes. The projection is done from a balcony in the screen wall at the end of the showroom, dividing it from the departmental offices at the rear.

At the rear of the showroom, but having an independent entrance from Renfrew Street, is situated a divisional Gas-fitting and Maintenance Section, with accommodation for eighty fitters, with suitable offices for the staff and Divisional Inspector, who will be responsible for the work in the North-Western portion of the City and suburbs.

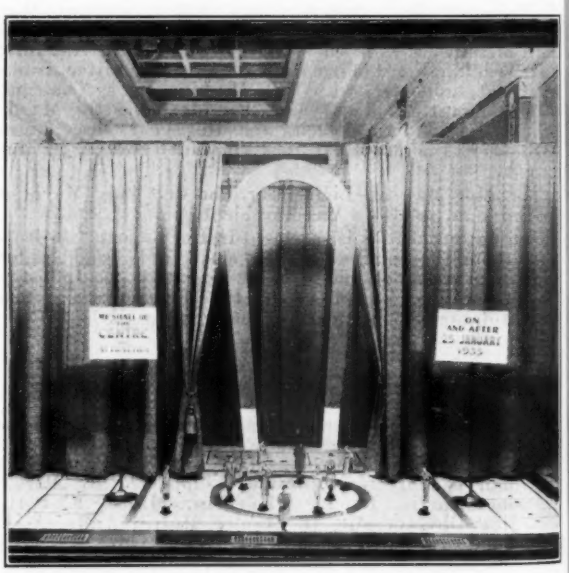
The lighting of the showrooms during the daylight hours is by means of flat ceiling lights glazed with delicately tinted amber glass, which can be completely screened during cinema demonstration by means of accordion pleated screens. Additional lighting is provided by means of panel gas lanterns designed by the Department's Sales Superintendent, and fixed high up in the frieze and incorporated into the general design of the walls. The result is a pleasing illumination, variable at will by means of a variety of tinted glass which can be superimposed in the lantern frames.

Ventilation.

The products of combustion from these lights and all other appliances are exhausted by means of concealed trunking behind the wall panelling and beneath the floor ducts to a fan chamber in the upper part of the building. From this far chamber fresh air is supplied through punkah louvres to all parts of the premises, so that there is always a greater volume of air delivered than is drawn off through the various exhaust outlets, thus creating a slight pressure in the atmosphere, ensuring that the air conditions will always be fresh.

Tasteful curtains, well designed furniture in mahogany, with illuminated counters and octagonal kiosks in the form of lighthouses are further features, and the opportunity has been taken to incorporate illuminated panels of industrial gas installations in these items of furniture.

Arrangements have been made with the Glasgow and West of Scotland College of Domestic Science for one of



The first window display in the new Showrooms.

their diplomees to give a cookery demonstration each Wednesday afternoon from the showroom floor, and it is expected that the seating accommodation for 150 visitors will be filled each week.

Opening Ceremony.

A large company assembled for the opening ceremony and crowds gathered on the pavement outside to view the excellent window display which included a table set for a Burns' supper.

Bailie Donald McIntosh presided and said that he considered it opportune to pay a compliment to the Special

Sub-Committee for their work during the past six years which had culminated in the Showroom about to be opened. From 1910 to 1928 the Gas Department had a showroom in Sauchiehall Street, and it was not realized how necessary these showrooms were until after the compulsory vacation. He wished to emphasize that the Gas Committee's policy in having modern premises in the best possible situation was in line with the policy of all modern progressive undertakings. The Gas Industry continued to make progress despite the strenuous rivalry of the electrical industry, and was organized to assist the public, both domestic and industrial, in every heating and lighting problem. The Gas Industry was one of the largest and most important national employers, having the direction and control of 115,000 employees. These Showrooms were intended to add another useful branch of service to the gas consuming public of Glasgow, numbering well over 300,000 customers, and he had no doubt that the enterprise would meet with the success it deserved. He then called on the Lord Provost to open the Showrooms.

For the Use of the Community.

The Lord Provost said that six years had been spent in finding a site to suit the convenience of the people of Glasgow. He complimented the Gas Department on their choice and the excellence of the interior decorations. These new showrooms were intended for the use of the community of Glasgow and their success would depend on the use made of them. He remembered gas having been called the "handmaid of industry;" it was also the handmaid of the housewife. He wanted to see it more widely used in every home. Raw coal was little used abroad, but here every house had its open fire; in consequence, they had thick fogs which took a heavy toll of human life. They had been trying for years to purify the air of the City, and the greater use of gas was one of the quickest means of attaining this end. Apart from domestic users, the Gas Department were supplying over a million gas consuming appliances. He did not believe that Glasgow had reached its maximum gas output. There was the possibility of greater manufacture of gas and the utilization of gas from other sources. It was not generally realized what the Gas Industry meant to the community as a whole, and it was only during a serious labour dispute, such as occurred in 1926, that they were brought, with a jolt, to the consciousness that their meals and their industry depended almost wholly upon their being able to turn the gas tap and get what they require. In Glasgow a quarter of the bread used was baked in gas ovens. The community was supplied by the Corporation with one of those great needs, and one seldom thought about or appreciated the enterprise required to supply it.

In formally declaring the Showrooms open, he said that they were not merely an ironmonger's store with everything stacked in confusion, but rooms in which the use of appliances would be demonstrated and where the consumers would learn to use more gas in the most economical way.

The Lord Provost was presented with a memento of the occasion by Bailie McIntosh, and a vote of thanks was proposed by the Senior Magistrate, Bailie Kenneth Muir Simpson.

The day of the opening ceremony being the one associated with the holding of Burns' dinners, advantage was taken by the proprietors of the Grand Hotel, Charing Cross (which nearly adjoins the Showroom), to establish their Chef and Hotel Cooking Staff in the Catering Section of the Showroom, and cook the meals eaten that evening by three large dinner parties which were doing honour to Scotland's Immortal Poet.

Glasgow and Scotland now have a Gas Showroom designed, decorated, and equipped in a style comparable with the best in the British Isles, and it is hoped and believed that Glasgow and its suburbs will make constant use of the facilities provided by the Gas Department.

Lytham St. Annes Offers Two-Part Tariff

We are indebted to Mr. J. H. Ranft, Engineer and Manager to the Borough of Lytham St. Annes Gas Department, for details of a two-part tariff he has introduced this year. In view of the attractive way in which attractive rates have been presented to consumers, we reproduce below the wording exactly as it appears on Mr. Ranft's folder.

The Modern Method of Charging for Gas for Domestic Purposes

The great developments that have taken place in recent years in the use of gas in modern households by the installation of automatically controlled enamel cookers, water heaters, fires, garage heaters, and numerous other labour-saving devices necessitates a special tariff to enable consumers to enjoy the full advantages of the use of such appliances with due regard to cost.

The two-part tariff has been introduced to fulfil this requirement, and at the same time introduce other important advantages to the consumer.

In consideration of a fixed charge, payable either weekly or quarterly, which may be regarded as a contribution to the capital charges the Corporation has incurred to enable them to give a gas supply, gas for all domestic purposes may be obtained at a special low price per therm or 1,000 used.

The chief attraction of the two-part tariff is that owing to the low rate charged for gas, the consumer has the advantage of being able to forecast very closely the account for any quarter, and additional useful appliances may be introduced for a much smaller advance on the usual accounts collected on the flat rate charges.

No minimum consumptions are required from consumers adopting this system; you may use as much or as little as you desire—and no meter rents are chargeable.

Conditions of Supply on the Two-Part Tariff

The "two-part" tariff is composed of—

(*a*) A fixed charge varying according to the number of rooms in the house of the particular consumer.

	Per Week s. d.
Houses with not more than 4 principal rooms	1 0
Houses with 5 or 6 principal rooms	1 6
Houses with 7 or 8 principal rooms	2 0
Houses with 9 or 10 principal rooms	2 6
Houses with more than 10 principal rooms	2 9

Principal rooms include all living rooms, bedrooms, attics, cellars, &c., but not boxrooms, bathrooms, or washhouses.

(*b*) A charge for all gas consumed at the rate of 4d. per therm, equal to 1s. 9d. per 1,000, or less than one-seventh of a penny per unit.

EXAMPLE—

6 room house using 50 therms per quarter.

TWO-PART TARIFF.

	£ s. d.
13 weeks at 1s. 6d. per week	0 19 6
50 therms at 4d. per therm	0 16 8
	£1 16 2

FLAT RATE.

	£ s. d.
50 therms at 9·524d.	1 19 8
Meter rent	0 1 0
	£2 0 8

A saving of 4s. 6d. per quarter, of 18s. per annum, and any additional gas is only 4d. per therm.

Consumers adopting this tariff will be required to sign an undertaking to remain on same for 12 months from date of transfer, subject to three months' notice thereafter.

Standardization and Quality Control

by
S. F. DUNKLEY, O.B.E.

In a Paper before the London and Southern District Junior Gas Association on Jan. 25, Mr. S. F. Dunkley, O.B.E., M.I.Mech.E., Officer in Charge of Stores Testing, Gas Light and Coke Company, stressed the advantages of standardization and gave a brief introduction to the current methods of verifying the quality of specified purchases.

There are few industries that handle such a vast variety of plant, equipment, apparatus, and materials as the Gas Industry. The production and recovery sides alone cover a very large field, while the distribution and utilization branches, with their necessary equipment for the manufacture, installation, and maintenance of a thousand-and-one different appliances, find contact with every industry. It would therefore seem reasonable to suggest that the widest knowledge and, where possible, the adoption or incorporation of Industrial and National Standards is desirable. The large range that these Standards now cover demands an observance of them when contact is made with other industries and therefore must have an important bearing on our future relations with other industries and the general public.

SECTION 1.—STANDARDIZATION.

Introduction.

For many years Government Departments, the larger Municipal Undertakings, and the more progressive industrial concerns have realized the necessity for reducing to a minimum the variety of stores and of specifying in detail their requirements in respect of plant and equipment. This automatically led to the preparation, in co-operation with individual manufacturers, of a large number of specifications for commodities in daily use; but there was no general co-operation between interested parties, resulting in a variety of specifications for one and the same article.

Although much valuable help has been derived from this pioneer work, the process of isolated simplification does not help Industry generally. It is not surprising to find that many of these individual specifications have been and are being co-ordinated into National Standards by our own National Organization—the British Standards Institution—and in some instances into Dominion and Foreign Standards, and, in a minor degree, into International Standards.

To ensure constancy of supply and to discriminate between the products of different manufacturers it is necessary to impose quality and performance tests. As a result, Inspection and Testing Departments were established by Government Departments and Industrial concerns, and these have gradually extended in scope and number. The duplication of these within comparatively small areas must be wasteful, and the time would not seem far distant when these individual Proving Organizations will also become either Industrially or Nationally co-ordinated.

The Meaning of Standardization.

To many, standardization means nothing but the monotonous and the inevitable; the retarding of invention and design, the elimination of individuality, and the complete cessation of progress. Others accept casually all the conveniences of modern times and forget entirely our dependence on standards in the provision of them. To these I would say that I hope that this Paper may at any rate go some little way in dispelling these ideas.

In its general application, standardization dates back as far as history records, speech, writing, measure, and time being the bases upon which civilization developed. To-day we look upon standardization as something applied to or connected with industry—hence the now more generally recognized term "Industrial Standardization." This term is now internationally recognized as applying to standard specifications and regulations governing the manufacture, assembly, and supply of all forms of equipment and materials. To those who may have been privileged to assist in the National work of co-ordination it conveys much more; it signifies the unification and simplification of all the requirements of industry by the very closest co-operation between the producer, merchant, and user—and, indeed, all interested parties. The work does not end here, but ensures a continuance of these amicable relations by frequent and careful reviewing of present practice and the making of such changes as may be desirable to meet current demands.

No far-seeing producer or merchant can afford to-day to proceed with any venture without regard to existing Standards, initial cost, a ready sale, and the safeguarding of goodwill being the deciding factors.

Testing of Governors, Taps, and Other Brasswork for Cookers at a London Firm of Appliance Manufacturers.

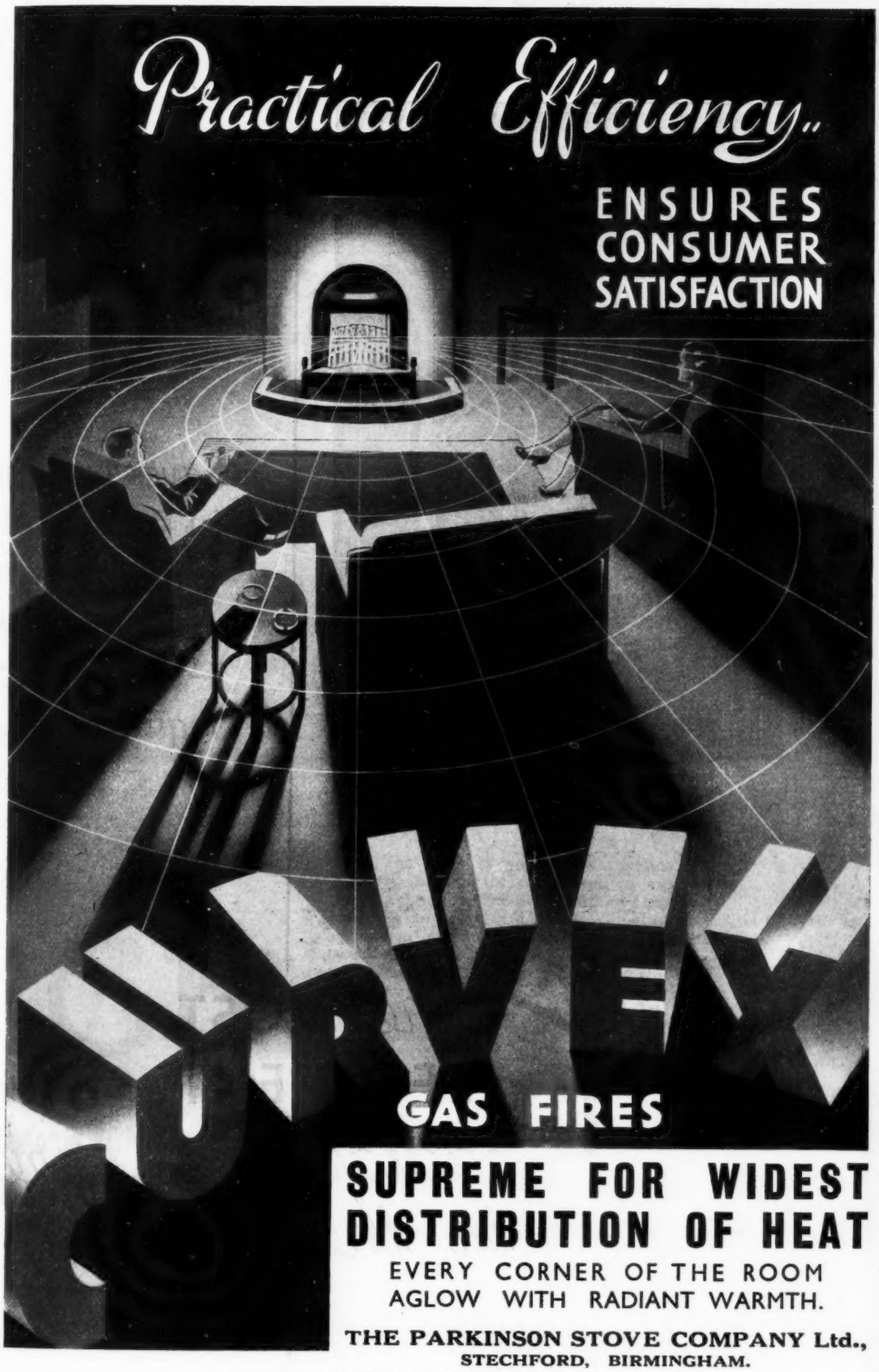
Therefore, to-day we must accept Industrial Standardization as the co-operation of all concerned, to produce the best commodity in sufficient quantity and at the least possible cost. There can be at any one time a very limited number of ideal ways of doing a job and they can only be selected out of all the good ones so far discovered. This elimination and discouragement of out-of-date commodities and processes opens the road for and speeds up the improvements of to-morrow.

It must surely be admitted that this standardization, far from leading to stagnation, is actually of great benefit to the community and that the necessary stimulus for progress is amply provided by competition between manufacturers, by the change in the demands of the public, and unemployment.

Whatever may be our individual opinion there is no doubt that there is a strong international feeling in favour of well-planned co-operative standardization and that the work involved and the many difficulties connected with it are too great ever to allow it to become the absurdity suggested by the critic.

Origin and Aims.

Industrial Standardization is now accepted as a necessity by all the nations of the world. The necessity became apparent with the growth of invention and progress of industry, and was first felt in the direction of the need for

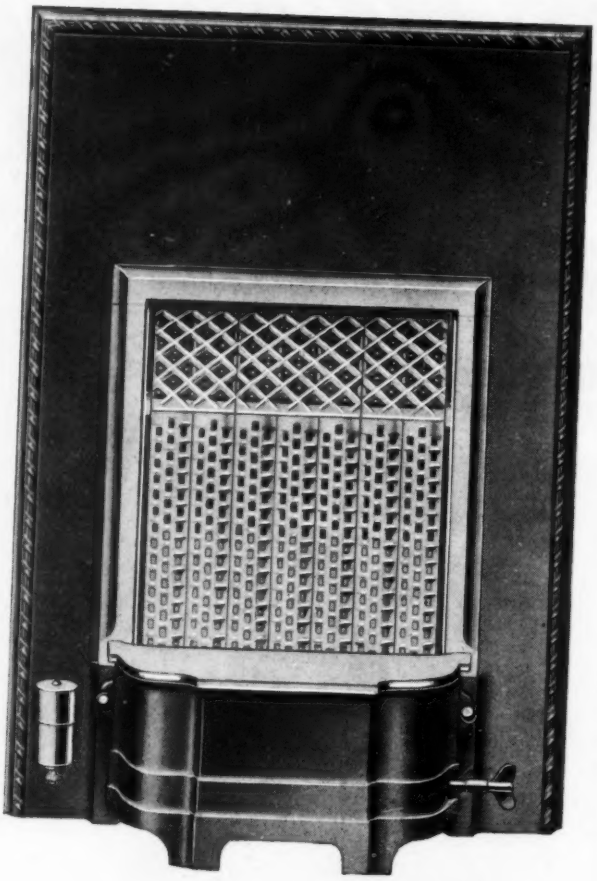


SUPREME FOR WIDEST DISTRIBUTION OF HEAT

EVERY CORNER OF THE ROOM AGLOW WITH RADIANT WARMTH.

THE PARKINSON STOVE COMPANY Ltd.,
STECHFORD, BIRMINGHAM.

London Showrooms: TERMINAL HOUSE, GROSVENOR GARDENS, LONDON, S.W.1.



"
.. never

Saves one therm
in every eigh
—more warmth
—lights itself
—no matches
required . . .

the **MOST EFFICIENT** *radiant gas fire in the world!*

found anything which equals this.."

—A HIGH 'BEAM' USER WRITES!

Supported as it is by National Advertising, the High 'Beam' fire is rapidly growing in popularity. It has all the features that make for lasting success with the Public and the Gas Undertaking. It is the outcome of step-by-step progress along proved lines, developed in the knowledge that only long experience can provide.

_____,
Bradford,
Yorks.
Nov. 26th, 1934.

Radiation Ltd.

Dear Sirs,

I am writing you because of seeing your advertisement once or twice in the "Mail," of the High "Beam" Gas Fire.

We had one installed three weeks ago, and are very highly delighted with it. What you say for it is perfectly true in every way. We tried one or two different kinds and were just on the point of reverting to the old coal fire, when we decided on the High "Beam."

The room in which it is, contains one large bay window and three doors, and we despaired of ever securing sufficient warmth. The High "Beam" is more than sufficient. We light it full, 9 burners, in half an hour we shut off the 4 end ones and even after that, when we are sitting in the room we can lower the main gas tap and still have sufficient warmth and comfort. The house is an end one and gets all that is going, cold winds, etc., in Winter but also the beautiful sunshine in the Summer.

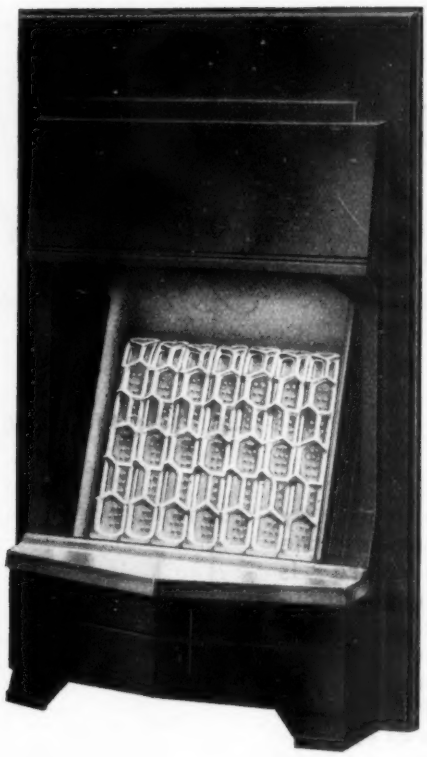
I felt I must tell you of this High "Beam" because we have looked around in many towns and never found anything which equals this.

Very sincerely yours,

(Sgd.) A. STORY (Mrs.)

The
HIGH BEAM
(TRADE MARK)
GAS FIRE

AURICULA



20% more useful heat, of course. In design, modern without being extreme; and as such a gas fire that definitely appeals to a VOLUME market. To show it, is to sell it.

Makers:

Cannon Iron Foundries, Ltd.,
Deepfields, Nr. Bilston, Staffs.

London Office and Showrooms:

Thames House, Westminster,
S.W.1

INCLINED

interchangeability of component parts, regular qualities of materials, and the prevention of accidents and sickness in industry.

At the beginning of the industrial era the pioneer work of Sir Joseph Whitworth in his advocacy of a uniform series of screw threads is outstanding, leading rapidly to the practically universal adoption of the Whitworth Thread as a standard.

With industry expanding rapidly and the introduction of new methods and processes, Parliament, insurance companies, and others found it necessary to investigate and form rules and regulations from a safety point of view governing the working conditions in factories and the plant and equipment used. Continued development stimulated by competition, invention, and research produced a multiplicity in design of plant, equipment, and product, and, with it, manufacturing administrative difficulties, which led manufacturers and others to find ways and means towards simplification. These early individual investigations resolved into what is known to-day as "Trade Practice," and it is largely upon this early elimination that our present Standard Specifications are based.

To-day Industrial Standardization is an essential part of our National Organization aiming at improved service to the community. Its primary objects are:

(*a*) To facilitate production and subsequent maintenance.
(*b*) To determine suitable qualities, types, and performances.
(*c*) To advance interchangeability.
(*d*) To ensure efficiency and safety in use.
(*e*) To facilitate comparison by the establishment of performance tests.
(*f*) To increase availability by reduction in cost.
(*g*) To simplify buying and selling.
(*h*) To facilitate administration generally.

Advantages.

Although many industries are fully alive to the necessity of Industrial Standardization, the difficulties still met with daily due to lack of it are very apparent. A little reflection brings home to most of us the waste of time, inconvenience, and expense connected with some of the most simple work, delay and return journeys for special tools to fit non-standard parts or to cut special threads, the unnecessary cutting and filing to fit, complications in design, making maintenance difficult, the difficulty of recognizing makes and dates of apparatus frequently changed in design, and of accurately describing parts without a recognized nomenclature. It is still an impossibility for any one contracting firm or ironmonger to stock replacement accessory parts of much of our domestic equipment owing to the enormous variety, all necessitating special calls and correspondence. If one of a pair of water taps requires replacing or repairing it is often necessary to buy a pair if a match is required, and until recent years the fitting of electric bulbs and plugs was akin to selective assembly. Many appliances are so designed as to require the quite unnecessary provision of a special type or size of tool before maintenance can be effected, thereby adding to the cost and complications of the work. All this is possibly due to the fact that the existence of certain standards and practice is still not widely known and also that the multiplicity in types, sizes, designs, and qualities of apparatus and their components is less apparent to the firms producing them than to the many thousands directly employed in their storage, installation, maintenance, and use.

In the past there has been no easy method of bringing home to the manufacturer these difficulties, although within recent years the increasing number of technical institutions and trade associations formed and the introduction by the larger firms of suggestion awards, have done a lot towards facilitating this. Those responsible for education in our technical colleges and schools can possibly help still more by arranging lectures in every trade and engineering course on the economics and advantages of Industrial Standardization. The advantages may be conveniently summarized as follows:

1. Greatly reduced manufacturing costs due to:
   (*a*) Less machinery and equipment required for a given turnover.
   (*b*) Time saved in breaking down and reassembling of plant, machinery, and equipment.
   (*c*) A quicker turnover of finished products and components.
   (*d*) Reduced floor space.
   (*e*) Reduced overhead costs.
   (*f*) Simplified supervision and inspection.
   (*g*) Simplified clerical and costing systems.
2. Reduction in idle and invested capital due to fewer patterns, more rapidly moving stock, and a reduction in overheads.
3. Less obsolete machinery.
4. The minimizing of the ill-effects of seasonal demands by the levelling up of the labour load, reduction of overtime, and unemployment.
5. Increased turnover.
6. A more stable and readily saleable line of goods.
7. A reduction in losses due to obsolete stocks.
8. Reduction in the number of selling lines facilitating the work of the salesman.
9. A product of more reliable quality at a cheaper price.
10. Greater choice of makers.
11. Quicker delivery, particularly in busy seasons.
12. Greater interchangeability of parts, ease of maintenance and repair.
13. Reduction in the cost and preparation of drawings, specifications, and tenders.
14. Fewer mistakes in ordering and supply due to adoption of standard specifications, terms, and definitions.
15. Reduced selling price.
16. Better second-hand value.

One of the important advantages frequently put forward is that approved standards diminish the amount of protective legislation that Government and Municipal Authorities require to establish. Some of this legislation would be unnecessary if the apparatus used were to some recognized standard or specification.

The one really important and great advantage from a national point of view is that the preparation of a standard specification necessarily involves the pooling of a large amount of technical knowledge and experience which would not be obtainable by other means. This co-operation and subsequent unity of action stimulates confidence, and is in itself a constructive means of finding remedies to many of our industrial difficulties and, by the liberating of large amounts of capital locked up in slow moving stocks, must provide incentive for its employment in other directions, with all round benefit to the labour market.

Initiation and Control of Standard Specifications.

Before considering the principles underlying the initiation and control of specifications, it may be desirable to define the main differences between standards, specifications, and contracts, as the word "standard" is often loosely applied.

Legal Standards are measures of extent, quantity, quality, performance or value established nationally by law or by general usage or consent for the convenience, safety, and general good of the community and for the purpose of forming a convenient and satisfactory basis of comparison, regulation, or adjustment. They must be made after considerable deliberation and must have a high degree of permanency owing to their wide general use and the economic difficulties that might be occasioned by faulty decisions or sudden changes.

These Standards are not dealt with in this Paper.

Standard Specifications are documents produced by a National Body dealing with specific items of general use and setting out clearly and definitely the size, performance, or quality, the conformance to various standards, and, usually, methods of testing. They include the establishment of agreed terms, definitions and symbols, and the formation of rules for performance and practice. They should have a reasonable measure of permanency in order that industry shall not unnecessarily be inconvenienced and should be reviewed regularly in order that progress shall not be retarded.

These Standard Specifications are frequently referred to as "Standards."

Individual Specifications cover those documents prepared by large commercial undertakings, trade associations, &c., for the use primarily of their own members with a view to making individual requirements definite and precise. In the interests of National economy and simplicity they should, whenever possible, be based on, and refer to, Standard Specifications, and modifications should be limited strictly to exceptional cases.

In some instances Individual Specifications prepared by large firms or by technical associations are accepted and endorsed as Standard Specifications.

Contracts are the formal legal and signed agreements between two or more parties and are the binding conditions recognized by law. They refer in general terms to specifications and drawings, but otherwise contain primarily agreements in respect of dates of supply or completion of work, the employment of and insurance of labour, errors and omissions, safeguards on matters of inevitable and uncontrollable occurrence, and penalties, and therefore need not be considered further.

Standard Specifications and Individual Specifications cannot be made haphazardly, as they may tend to complicate rather than simplify and result in unnecessary expense both to producer and user if not generally accepted. The question also as to how much detail a Standard Specification should contain is often a matter of considerable controversy. It is an easy matter to fix a standard, but in these times of rapid production it is often expensive and not so easy to correct a wrong one; it is wise, therefore, to work slowly but surely.

There is a real danger in standardizing everything and anything simply for the sake of standardization, and in cases where there is no real need for it.

The best method is to consider the simple individual things of which we build the structure and let the whole evolve naturally itself. For example, except so far as safety is concerned, it is often far better to standardize only certain component parts of a machine, leaving design and performance open to research and invention. The unlikelihood of immediate improvement decides when the whole can conveniently be standardized and when the community can be given the fullest benefit from quantity production.

The basis of discussion in deciding whether any Specification is desirable should therefore be the present need for it, anticipation of future confusion, its general effect on industry and the community, and the effect on future progress and efficiency.

A satisfactory decision can only be reached by bringing together and co-ordinating the views of all interested parties, particularly those intimately connected with production details and use. This free expression of views and the bringing together of people with a common interest establishes mutual confidence and understanding which cannot easily be obtained in other ways.

One of the most difficult tasks is to obtain a true and proper perspective of the requirements of the actual user, and it is largely due to this difficulty that greater progress has not been made in many directions. Industrial plant and machinery are more easily dealt with through the many technical organizations, the actual users expressing by papers and discussions their difficulties and requirements, but in the case of the commodities produced for general consumption, the problem is more difficult. There appears to be no easy means of discussion; the likes, dislikes, and opinions expressed to individuals being so varied and generalized that they are accepted as little more than an expression of individual taste, or habits, and consequently little or no direct action is taken.

The utilization branch of the Gas Industry is possibly unique in being in such close and constant touch with the users of its two primary products, gas and coke, and of the fuel burning appliances. These remain permanently under our eye through our Research, Testing, Installation, Training, Maintenance, and Advisory Sections. Close co-operation between these sections, coupled with suitable administrative statistics of each, provide possibly more accurate facts than are obtainable in any other industry.

It is on this first hand information that our standards should be based, and the fullest use should be made of this advantage by pooling the knowledge and providing closer co-operation with the manufacturers. Any standard thus made would then have a really economic basis, representing the best which can economically and advantageously be produced for the moment without any possibility of setting an ideal which may be too costly to be successful.

Need for United Effort of Industries.

Although convenience, adaptability and appearance, play such an important part in public choice, to the majority the question of cost is more often than not the deciding factor. Here Industrial Standardization has definitely given the greatest benefit, by making available better products at greatly reduced costs, and putting in the reach of thousands necessities and pleasures that would otherwise have been barred to them.

In all phases of life one can readily find waste of time, materials, and effort. The excessive variety of given commodities increases the difficulties and costs of the producer and factor, and leaves the user mystified as to quality and choice, and usually with a higher price to pay than is necessary. It is an easy matter to analyze the products of any industry and show that by far the largest output is over a very limited range of types and sizes. There is much to commend in individuality of design, and those who demand it can always have it if they are willing to go to the trouble and pay the price, which is usually a high one and out of all proportion to the advantage and satisfaction gained.

The public is daily growing wiser to the principles of low initial cost, to the need for easy maintenance, replacement and interchangeability, and the producer also is more eager for steady sales.

The motor and cycle industries provide an outstanding example of a case where simplification of types and standardization of components have permitted of mass production with increased efficiency and greatly reduced prices. The rapid development of the electrical industry has also been stimulated by successful standardization on a national basis.

The lack of interchangeability of component parts is one of the most irritating and wasteful faults of a designer, involving inconvenience, delay, high cost of maintenance, and large complicated slow moving and often obsolete stocks. There is no need to dwell on this, as a casual inspection of the stocks and outstanding orders of any of our maintenance stores tells its own story.

Mass Testing of Cooker Thermostats.

Another strong point in favour of standardization is that by its more general adoption it would be possible to reduce greatly the adverse effects of seasonal demands. Everyone is affected in this direction in some way or other, the most serious effects to Industry generally being administrative complications, higher cost of production, and the resulting atmosphere of uncertainty.

With unnecessary variety of product and continual change of design, future demands are always more difficult to estimate, and manufacturers and distributors tend to err on the low side in order to sell at a definite profit rather than lose heavily on surplus stocks. The result is slow delivery and poorer quality after the first heavy demands have been felt. The regulation of the labour load is still more difficult, involving at times long periods of unemployment and hardship, and at others uneconomical overtime. Employers generally would find it more economical to have an even labour load, and a permanent staff giving more and better quality work and service, and those employees who have experienced long periods of compulsory idleness would prefer to be relieved of the worry and difficulties, while their more fortunate colleagues have shown, through their Trade Unions, their willingness to let the overtime be handled by the unemployed.

The requirements of industries are so interlocked that the forward buying of standard commodities to anticipated requirements must go a long way to simplifying labour difficulties.

Buying and Selling.

A specification is a means of ensuring that the supplier shall really know what the intending purchaser requires, while at the same time it enables the purchaser to check

his supplies before final acceptance and gives him a legitimate ground on which to reject unsatisfactory supplies. It should, therefore, contain the necessary description and detail to enable it to be easily recognized by the layman with a minimum of specialized knowledge, and for the supplier to deliver the exact article required.

The confidence established in buying and selling to known and recognized specifications has long been realized. Many proprietary articles, by this means, give the purchaser sufficient knowledge of what he can expect. Some well-known proprietary foods and medicines became, and have remained established for years largely on their advertised and guaranteed specifications, and even our medical profession accept and prescribe them.

A buyer's function is to control purchases, and to this end he is usually guided by financial and technical considerations which are linked with the work of other departments and which are more or less out of his hands. No one individual can be expected to know all there is to learn of every industry and profession, and a buyer is therefore relieved of the necessity of concerning himself with a mass of technical detail. The seller, in his turn, knows exactly what is required and that any variation will lose him the confidence of his customer.

The small buyer who has no facilities for testing is placed in a much safer position, being able to seek advice as to standards and rely on a standard description and obtain a better price than if he had merely to discriminate between different personalities.

Manufacturers, in their own interests, tend automatically to follow a sound standard, and consequently provide for the user a much wider choice of suppliers, prices become competitive and selection is largely made on quality.

The salesman also is able more readily to learn the essential details of the products and his customers' requirements and to put more intelligence and concentrated effort into the fewer stable lines.

On the administrative side, accounting and clerical work is facilitated, and fewer mistakes are made both in the office and the stores.

National Standardization.

Industries and Government Departments of the largest producing countries have long found it necessary for reasons previously expressed to produce Individual Specifications applicable to their special requirements, and it is not surprising to find that in practically all the producing nations of the world simplification and standardization is organized on a national basis and that many of the individual Industrial Specifications have formed the basis of National Standard Specifications.

There are many active standardizing bodies in Europe, each of which works in a manner characteristic of its own country. Constant communication is maintained between these standardizing bodies and our own British Standards Institution, and copies of all specifications are exchanged. The following countries besides our own and the Dominions have active national standardizing bodies: France, Germany, Belgium, Switzerland, Norway, Sweden, Finland, Denmark, Holland, U.S.S.R., Poland, Austria, Italy, Czechoslovakia, Hungary, and U.S.A.

Of these countries Germany, Russia, and U.S.A. appear to be the most active and have a wide range of specifications. The majority of the other countries confine their activities at the moment to mechanical, building, and electrical subjects.

It is interesting to observe that in all countries where intensive National Reconstruction has been carried out, standardization has necessarily played a fundamental part and has generally been modelled on the organization of the British Standards Institution.

[At this stage the author outlined the organization for standardization in the United States of America, Germany, and Russia.]

International Standardization.

In view of the importance of international trade, it seems inevitable that there must be more and more general agreement between producers and purchasers all over the world, and there are already indications both politically and commercially of this taking place.

It is interesting to recall that the International Commission on Photometry was the outcome of a Congress of members of the Gas Industry held in Paris on the occasion of the Great Exposition of 1900, when the following resolution was unanimously passed:

> The International Congress of the Gas Industry, considering that it is in the general and common interest of manufacturers as well as consumers of gas, to have exact information on the illuminating power of burners used for incandescent lighting, resolves that an International Committee be appointed with the object of determining the rules to be followed in photometric observations on incandescent gas burners. The Congress Executive is authorized to proceed with the organization of this International Committee.

The organization of the new Commission took a little time, and its first meeting was held in Zurich in 1903. In 1911, at the Turin Electrotechnical Congress a recommendation was made that an International Commission on Illumination should be formed, and eventually the original gas organization was superseded by this International Commission.

Under the International Commission are prepared recommendations over a wide range of illumination subjects, most of which are either of the character of standardization or are preparatory work for standardization. These include definitions and symbols, factory and school lighting, street lighting, cinema lighting, photometry, calorimetry, &c. The Illumination Industry Committee of the B.S.I. is identical in personnel with the British National Committee of the Commission.

The Commission, in regard to standards for electrical apparatus, works in the closest touch with the International Electrotechnical Commission, which was formed in 1906, its object being to establish an international and fair method of comparison of tenders for electrical machinery. It has twenty-seven countries taking part in this work, and steady progress has been made and many recommendations have been incorporated in National Standards.

In recent years it has issued International Standards for the rating of steam engines, both turbine and reciprocating, and has in preparation standards for agreed methods of rating oil engines and gas engines, while standardization in the electric lamp industry is fairly complete.

It is interesting to note that the control of the International Standard Candle is now under the International Bureau of Weights and Measures, which is an intergovernmental body. The recommendations of the Bureau for the standardization of 20° C. as a normal temperature of adjustment of standards of length has also been internationally agreed.

Some years ago an attempt was made to set up a federation of the various national standardizing organizations. This Federation has come into being, first as a federation of the European standards bodies which all had a system of weights and measures in common, and subsequently the American Standards Association became affiliated. The British Standards Institution has not been directly associated, as practically all the original work related to questions of standard sizes, where there was a direct difference between the metric and British systems of measurement, but it participated in those subjects in which there were reasonable grounds to expect that co-operation could lead to useful results. At the British Standards Institution a complete set of all the official specifications of all countries is maintained, copies being available for purchase or loan.

This interchange of procedure does have considerable influence on the work of the committees of the British Standards Institution, as they have available all relevant information in regard to what has been done in other countries.

In all cases of international standardization work the British Standards Committees act as the British National Committees for the particular subject in which they are interested. In this way the British viewpoint is first ascertained and then submitted to the appropriate international body with due weight and influence, and this method of working, whereby British Industry as a whole speaks collectively at international discussions, has led to very satisfactory results. There are also a number of international organizations (for example, the International Association for Testing Materials) which are concerned in part with questions of standardization and with all these the British Standards Institution keeps in the closest touch.

British Standards Institution—Constitution and Scope.

The British Standards Institution is one of the oldest National Organizations of its kind in existence, having been instituted in 1901 by a Committee formed by the Institution of Civil Engineers in co-operation with the Institution of Mechanical Engineers, the Institute of Naval Architects, the Iron and Steel Institute, and the Institution of Electrical Engineers. Since then it has been instrumental in getting parellel National Standardization Organizations exactly similar to the British Standards Institution formed in most of the Dominions, further reference to which is made later.

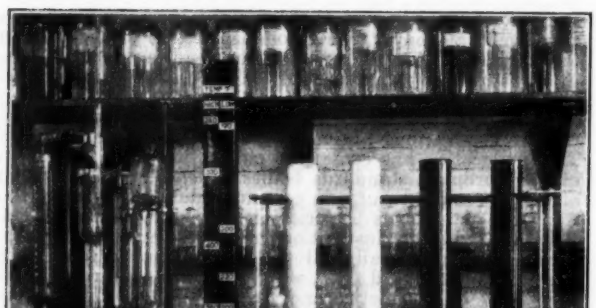
The work of the British Standards Institution having grown so rapidly it is felt that a reference to the organiza-

tion and the wide field covered by it may be of use and interest to many of our members.

The Institution is the recognized National Body co-operating with, and generously supported by, Government Departments, National Research Stations, and Industry Research and Trade Organizations. The whole of the necessary technical assistance and funds are obtained entirely by voluntary contributions from these supporting organizations and the sale of its publications, with the addition of a grant of £3,000 a year from H.M. Government and grants from the Crown Colonies and India. It is by reason of its being carried on outside the scope of politics, and of the keenness resulting from voluntary support of all interested parties, that the work is so fundamentally sound.

The aims and objects are adequately and concisely stated on the covers of the more recent specifications in the following words:

> The principal objects of the Association are to co-ordinate the efforts of producers and users for the improvement, standardization, and simplification of engineering and industrial materials. To simplify production and distribution. To eliminate the waste of time and material involved in the production of an unnecessary variety of patterns and sizes of articles for one and the same purpose. To set up standards of quality and dimensions, and promote the general adoption of British Standard Specifications throughout the Engineering and allied industries.
>
> In all its endeavours the Association maintains the community of interest of Purchaser and Producer. It does not embark on any work without first ascertaining that there is a consensus of opinion in favour of its being proceeded with, and that it is to fulfil a recognized want.



Apparatus for Testing Heat Resisting Paints and Finishes in the Laboratory of a well-known London Firm of Paint Manufacturers.

The work is governed by a General Council and sub-divided into four main divisions:

(*a*) Engineering.
(*b*) Chemical.
(*c*) Building.
(*d*) Textile.

The work of these four main controlling divisions is again sub-divided into Industry Committees, which in turn supervise some 600 specialized technical working committees. The interests of all parties concerned are adequately safeguarded by carefully balanced representation, which in all cases is provided voluntarily, but nevertheless very generously—some 3,500 engineers and business men co-operating and giving freely every year of their experience and time.

The entire responsibility for the drafting of standard specifications rests on the shoulders of the technical working committees who elect their own chairman and are free to co-opt further members, or seek advice as necessary.

The work of drafting the specifications demands considerable care and accuracy, and usually four or five drafts are prepared before they actually pass to the industry or appropriate supervising committees for provisional approval. The final draft is then circulated for comment and criticism in the widest possible field. The comments are summarized and examined item by item at further meetings of the committee, at which full opportunity is given for correspondents to be present.

It is quite impossible here to detail adequately the scope of the work, but catalogues are available covering over 600 specifications which can be said to touch practically every important branch of industry. The fact that there are to-day some 600 committees actually compiling or revising specifications and some 1,500,000 current copies of specifications in circulation should give some idea of the magnitude and importance of the work.

Among the work that appeals to me personally as specially worthy of mention, in view of its fundamental nature and widespread beneficial effect, is that of the setting up of standards for definitions, terms, symbols, and abbreviations. Seven glossaries have already been completed for Aircraft, Electrical Engineering, Telegraphs and Telephones, Illumination and Photometry, Welding and Cutting, Electro-technics, and Railway Signalling, and others are under consideration. There is every indication of this work extending in other directions, as evidenced by the recently issued specifications classifying Timbers, Cements, and Plasters and Mortars—three very admirable and much needed pieces of work. A simpler piece of work, nevertheless effecting considerable saving of time to those preparing and handling engineering drawings, is that dealing with Engineering Drawing Office Practice.

This classification of terminology appeals to me as the correct way to start on any systematic standardization, as it immediately facilitates the work in all sections, and makes easy the path to further simplification.

The quality and property specifications are of interest to all industries, among them being:

(*a*) Metals and the better known alloys.
(*b*) Paints, oils, and varnish alone comprising some 60 specifications.
(*c*) Tars and road-making materials.
(*d*) Chemicals and laboratory glassware.
(*e*) Cements and plasters.

The disputes that arise through careless and incorrect methods of sampling are well-known, and although this point is, whenever possible, dealt with in the individual specifications, a special document has been devoted to Sampling of Coke and Small Fuel, while there is another on Methods of Analysis for Coal and Coke. A very interesting publication dealing with the principles of statistical analysis as applied generally to sampling and testing for conformity to a specification is on the point of issue.

The much debated subject of determining the quality of protective metallic finishes has been covered to some extent, as well as the method of preparing test pieces.

Other specifications that should have much wider publicity are those laying down identification colours for pipe lines, gas and fluid cylinders, foundry patterns and colour standards, while those detailing performances and requirements for engines, motors, and boilers make valuable reference in the office of every engineer.

Items that will appeal particularly to those employed in the engineering and practical trades include rolled steel sections, rivets, bolts and nuts, spanners, pipe flanges, pipes and fittings for heating, ventilating, gas, water and sewerage, bar, sheet, and strip metals, drills, screw threads, beltings, and ropes.

Dominion Standardization.

National Standardizing Bodies comparable to, and in very close liaison with, the British Standards Institution exist in all the British Dominions, with the exception of India, which is at present contemplating the establishment of one. For many years all the dominions have been strong supporters of the British Standards Institution, and it can be truly said that their organization and work are largely modelled on its methods and principles. The work is proceeding rapidly, Australia alone having over 500 Technical Drafting Committees engaging the voluntary help of some 4,500 technical and business men.

All final draft British Standard Specifications are referred to the Dominion Associations; and those of the Dominion Associations to the British Standards Institution for examination and comment prior to their adoption and issue, and copies of both draft and issued Standard Specifications published in any part of the Empire are available for inspection or purchase at all the Organizations.

The co-operation in this work and in the Imperial Liaison Committee should provide a better and more general understanding of the difficulties and commercial requirements, and therefore be the means of still firmer unity within the Empire.

Value to Imperial and Foreign Trade.

The importance of this national work to imperial and foreign trade will be realized, particularly in view of the speed with which the work is everywhere progressing. In the past, owing to the absence of British Standards, even our Colonies were inclined to adopt foreign standards, and the greatest importance should be attached to imperial co-ordination.

There is everywhere a desire to encourage and increase trade within the Empire, but in the past this has been hindered by insufficient knowledge of requirements, unsuitable supplies, and differences in trade practice. To ensure success in this it is necessary to establish complete confidence as to the suitability of the goods offered, and mutually agreed standards would appear to be the easiest method.

The Imperial Conferences in London of 1926 and 1930 directed attention to the urgent necessity for the co-ordination of specifications within the Empire, and to the desirability of one central National Standardizing Body. It was largely this that led the Chemical Industry of this country to invite the British Standards Institution to undertake the preparation of British Standards for that industry.

Foreign buyers, also, are to-day not so ready to take goods on their face value, but require details of quality and methods of test, and some specifications have been prepared with this point definitely in mind. In the near future it is likely that countries will insist on exports being up to a recognized standard, as the reputation of a country for the supply of good material will become a valuable sales feature. Manufacturers and others are therefore finding it increasingly necessary to have a very full knowledge of British, Dominion, and Foreign Standard Specifications, as these provide the detailed information as to the qualities of materials and products required by and produced in the respective countries.

The British Standards Institution has already formed Local Committees in important markets in order to encourage the use of British Standards and to secure effective liaison with users in those countries.

Standardization in the Gas Industry.

It is generally recognized that the Gas Industry is well organized, having an active Technical Institution, and other Technical Associations, an excellent Press, good advertising and good educational facilities; but it has often been suggested that the Industry has taken little or no active part in the efforts towards Standardization. This assumption would appear to be based on the fact that there are very few National Standard Specifications applying to apparatus and commodities used solely by our Industry. This may be true in one sense, but very definitely untrue in its broader aspects. The Gas Industry was one of the first to be very rigidly standardized from a national point of view so far as the quality, measuring, and method of test of its main products are concerned. It is now becoming generally realized that the fuel itself is approaching perfection and that the task of the Gas Industry must now be to bring its appliances up to the same standard. This will be greatly facilitated by the adoption, whenever possible, of National Standards which will ensure durability, interchangeability, ease of maintenance, and reduction of cost. The importance of this has not always been recognized either by designers or our own technicians. It is also surprising to find manufacturers in general do not appreciate that the Gas Industry is one of the largest users of their products, or the requirements of our Industry.

Our Industry has two main problems before it:

(*a*) To produce and distribute as cheaply as possible its two basic products—gas and coke.

(*b*) To obtain as efficiently and cheaply as possible the thousand and one appliances for the utilization of these products.

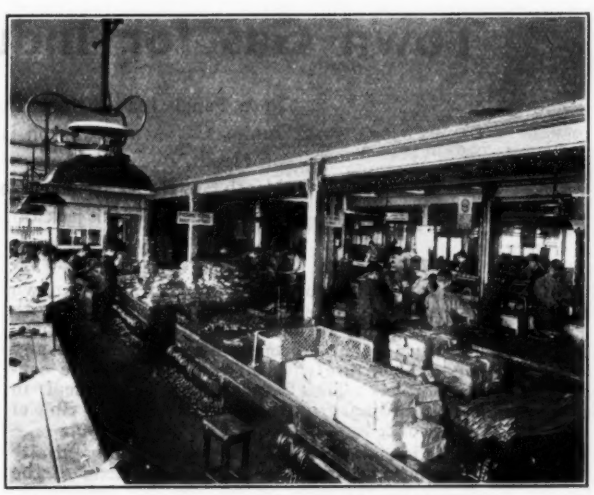
To meet competition, efficiency in use is obviously of prime importance, and, like all other industries, the Gas Industry has been shy of any standardization which might in any way hinder invention. This point was brought out clearly as long ago as 1922 in the report of the National Gas Council on the proposals for standard gas cookers.

There is, of course, always the question of safeguarding our customers' and our own interests against the inexperienced and unscrupulous manufacturer by the establishing of minimum performance tests for apparatus. One can see difficulties in this matter, particularly in the case of industrial apparatus, and at the present time the Gas Industry Committee, at the instance of the Institution of Gas Engineers, has set up four Technical Committees to investigate the matter from the point of view of establishing methods for the evaluation of efficiencies and methods of test.

The American Gas Association has already considered the establishment of minimum basic requirements for the installation, performance, safe operation, and durability of construction for gas burning appliances, together with laboratory methods of test. It has already issued through the American Standards Association, standards of approval requirements for the following:

Domestic Gas Ranges.
Hotel and Restaurant Ranges.
Private Garage Heaters.
Clothes Driers.
Incinerators.
Gas Heated Ironers.
Conversion Burners for House Heating and Water Heating Appliances.
Refrigerators.
Water Heaters.
Central Heating Gas Appliances.
High-Pressure Gas Boilers.
Space Heaters.
Hotplates and Laundry Stoves.
Unit Heaters.
Flexible Gas Tubing.
House Piping and Appliances.
Draught Hoods.
Gas Range Cocks.
Semi-rigid Gas Tubing and Fittings.

Similar standards have been produced and issued by the German Society of Gas and Water Engineers under the supervision of the German Patents Committee.



A Section of One of the Stores Testing Shops at Watson House, Gas Light and Coke Company.

A reduction, where possible, in the number of types, designs, and sizes of all classes of apparatus, would appear to be desirable and, if effected, would most certainly reduce manufacturing costs. Standardization would also have an important bearing on initial and subsequent maintenance costs of all gas appliances.

The standardization of certain component parts and accessories used by different makers might be difficult, but not impossible and would permit of mass production by specialization.

The adoption where possible of materials and fittings to suitable National Standards, already produced in large quantities for other industries, should permit of still further reduction in the cost of many of the articles. This latter point could be immediately and profitably investigated by makers, without the introduction of any special organization.

Our Industry, through the Institution of Gas Engineers, has already very loyally supported the British Standards Institution in the preparation of a large number of these specifications by providing representation on the General Council, Chemical Divisional Council, Engineering Divisional Council, and on any of the 600 working technical committees whose work could in any way be considered to concern our Industry. In this way already a large number of the commodities of general interest both to ourselves and other industries have been handled. Much, however, re-

mains to be done both in items of universal use and particularly in items peculiar to our own Industry.

It is generally recognized that the requirements and interests of different industries are so interwoven that it would be impracticable and uneconomical for any one organization or industry to prepare single-handed working standards that will be universally adopted, and this has led to the formation, under the ægis of the Institution of Gas Engineers, of the Gas Industry Committee of the British Standards Institution, whose main duties are:

(*a*) To review the work about to be commenced by all sections of the British Standards Institution with a view to deciding whether representation from the Gas Industry on the working committee is desirable.

(*b*) To review, comment upon, or pass draft specifications.

(*c*) To approve the setting up of working committees on matters primarily connected with the Gas Industry.

This Committee co-operates with the Institution of Gas Engineers, the Society of British Gas Industries, and the British Commercial Gas Association on all matters concerning standardization. The Committee has several Technical Committees dealing with quality and dimensional standards of Flexible Metallic Tubing, Galvanized Iron and Vitreous Enamelled Flue Pipe and Incandescent Mantles, and type standards for Industrial Goggles. There are also sub-technical committees dealing with the difficult task of compiling a Glossary of Terms and Definitions for use in the Gas Industry. Sub-committees have also been appointed to deal with the preparation of standard methods for the evaluation of performance and efficiency of appliances. A specification for meters and another for meter unions is contemplated. The recently completed work of the standardization of the outside diameter of light copper tubes for water and gas was also carried out as a result of the representations of this Committee. A dimensional standard (B.S.S. No. 570-1934) for a type of gas flex plug and socket connection has also been issued to avoid as far as possible similar confusion which persisted in the electrical industry for years after the introduction of their flex plug and socket.

There is much other work waiting to be done, but the difficulty in the way of progress is that of finding suitable representation from those in the Industry who have sufficient detailed knowledge and who can conveniently spare the time to undertake the long journeys and the committee work necessarily involved. To meet this difficulty the possibility of circularizing questionnaires and more detailed minutes, and the summarizing of comments might speed up some of the work. In view of the importance of the work to the future of the Industry generally, the matter is worthy of very full consideration.

(To be continued.)

SOME ASPECTS OF

Town Gas for Industrial Purposes

by G. E. THOMAS

In a Paper read before the Wales and Monmouthshire Junior Gas Association on Jan. 19, Mr. Gwynne E. Thomas, of Neath, outlined some of the results obtained by the Neath Gas Department, under the direction and supervision of Mr. W. Clark Jackson, the Engineer and Manager.

Two years ago the Department approached a well-known engineering firm with a proposition for experimenting with gas on a small crucible furnace used for brass melting. The particular furnace had been idle for some time and had previously been in use with oil as the fuel. The construction was simple. The furnace was cylindrical in shape, made with ordinary firebrick, with an outer ring of insulating brickwork, and finally a cast iron casing.

Burner connections were fitted at the base tangentially to the furnace so that the flame from the nozzle of the burner impinged on the side of the circular brickwork, setting up a swirling motion and encircling the crucible. It was no difficult matter then to connect burner equipment to this furnace. This was done, using the British Furnaces burner which incorporated a special automatic mixture control.

Air at a pressure of 10 in. water gauge induced gas which was cut down to atmospheric pressure by the governor of the automatic mixture control. This experiment was a success from the beginning, the time taken to melt a 160 lb. crucible being a quarter the time taken with the coke-fired furnace previously used. The melt itself was far superior to the old, a peculiar effect being noticed. With the gas-fired crucible the brass started to melt from the top downwards and trickled over the solid brass underneath, and since the crucible and brass was at practically an even temperature from the top to bottom it helped to melt the remainder of the brass quicker.

In the coke-fired crucible, however, the brass melted at the bottom of the crucible which was at a higher temperature than the remainder, so that the solid brass above sank into the molten brass, using the heat stored in the molten brass to bring it to melting point and convert it to the molten state, which all needed more time. In the semi-molten stage there is a danger of the brass picking up foreign matter, especially where solid fuel is used, with the consequent formation of a fairly large amount of scruff.

In the coke-fired furnace this danger point stage takes effect at the top of the crucible, melting of the brass as previously explained taking effect from the bottom upwards. In the case of the gas-fired crucible, and where brass completely melts at the top first of all, this danger point is practically eliminated.

Results.

FIRST CHARGE.

Time furnace lit up	9.30 a.m.
,, ,, shut down	10.50 a.m.
Time taken	1 hour 20 mins.
Charge	200 lbs.
Composition	82% Cu, 10% SN, 8% Pb
Consumption	1,050 c.ft.
Calorific value	425 B.Th.U.
Consumption per lb.	5·02 c.ft.

SECOND CHARGE.

Furnace re-lit	11.17 a.m.
,, shut down	12.22 p.m.
Time taken	1 hour 5 mins.
Charge	200 lbs.
Composition	82% Cu, 10% SN, 8% Pb
Consumption	770 c.ft
Consumption per lb.	3·35 c.ft.
Total charge	400 lbs.
,, consumption	1,820 c.ft.
Consumption per lb.	4·55 c.ft.

From the above results it can be seen the time of a single melt is of short duration, and is therefore of utmost importance to a foundry manager who may have a tremendous number of emergency cases to cope with. From the actual results obtained it showed that where previously two crucibles at the most could be melted a day with the old coke furnace, it was now possible to obtain four at least with the gas-fired furnace.

Six months later the Department continued experiments in brass melting, this time with a large capacity open hearth furnace. The furnace was of the usual coal-fired type, with fire box at the rear, the flame and heat from which were drawn over the bridge into the furnace.

The hearth sloped gradually for the first 5 ft., there being a fall of from 4 in. to 6 in., but in the remaining 5 ft. the fall was more pronounced, being as much as 1 ft., this latter portion being the bowl of the furnace.

It was here that the molten metal collected prior to its being tapped. The roof of the furnace sloped correspond-

ingly, the slope being parallel with the slope of the first portion of the hearth. The flue for taking off the waste-heat products was built in the roof at the very end of the furnace above the molten metal.

For the experiment we could at that moment only adapt our burner equipment to the furnace, as the firm concerned were not prepared to convert the furnace entirely without having some proof of its capabilities. The burner equipment was fitted in two rows at the division between fire-box and furnace, the bridge having been temporarily removed.

One row of burners was placed at hearth level so that the flame could play on the metal direct; the other row was placed under the arch so that the flame could play over and down on to the top of the metal. The burners used were those of the Gas Light and Coke Company. Brass was melted, but from the first it was evident that the length of the furnace and its bad state of repair were going to be great handicaps.

Brass, which had been melted on the hearth, in trickling down to the bowl, began to set at a point about 8 ft. from the burner. This was due to more than one cause—namely:

(1) The dimensions of the furnace were too large for the capacity of metal.
(2) The design of the furnace was not conducive to the best results from a gas firing point of view.
(3) Heavy radiation losses at all points on the brickwork.
(4) The brass piled on the hearth was preventing much of the heat reaching the end portion of the furnace during the early part of the process.

It was therefore necessary for experimental purposes to remedy this lack of heat in the easiest and quickest way possible. This was done by installing burners at the bowl of the furnace to help it along during the initial heating. These were placed on the side of the furnace so that the flame played across the width of the furnace at a level just above the maximum level to which the molten metal rose.

This served its purpose admirably with an added advantage. A large bulk of molten brass has to be kept at a temperature considerably higher than its melting point so as to facilitate easy flow and to enable the running of long thin castings, and with the introduction of these burners this was certainly brought about. The furnace was then worked for a period of 3 to 4 months, subjecting it to tests with the heaviest possible charges.

An average result obtained was as follows:

Furnace lit up	8.53 a.m.
,, charged	11.25 a.m.
,, tapped and shut down	1.15 p.m.
Time taken	4 hours 22 mins.
Weight of charge	22 cwt. (2,464 lbs.)
Composition charge	82% Cu, 10% SN, 8% Pb
Consumption	15,750 c.ft.
Calorific value	425 B.Th.U. per c.ft.
Consumption per lb. of brass	6·4 c.ft.
Efficiency	15%

These results, satisfactory as they were, were not all that had to be considered. The finished product was as equally an important result from the foundryman's point of view as was the thermal yield from ours. Castings had to be free from any defects such as blow holes, gas holes, cold sets or cracks, and when these were found practically absent the case for gas-firing had actually been won.

Coal Condemned.

Owing to the nature of brass and its affinity to foreign gases and solid matter, coal was naturally condemned owing to its volatile nature in evolving impure gases, especially sulphur compounds, which were readily picked up by the molten metal in the furnace.

I will illustrate such an example with the following figures, which were obtained from the gas-fired process.

Composition.

	Before Melting.		After Melting.
	%		%
Copper	80·7	..	81·8
Tin	10·10	..	8·66
Lead	9·12	..	9·47
Phosphorus	0·008	..	very slight trace
Iron	0·072	..	0·07
	100·00		100·00

The term iron is really a misnomer, since it embodies 90% dirt and foreign matter, there being a very small percentage of iron present. As you can see, this figure remains constant in the gas firing process, but during the coal or coke firing process it increases greatly and has risen to as much as 1·7%.

Again, coal fires have no sure control. Such control is absolutely essential in the melting of non-ferrous metals. Furthermore, oxidation through overheating and overpulling is fatal to non-ferrous metals and reduces their strength and wearing capacity considerably. Observations were taken of the melting operations in the coal furnace and gas furnace. Oxidation was very apparent in the coal furnace. The greenish blue flame associated with copper and iron was very evident, the molten metal itself having a reddish film of oxide on the surface.

With the gas firing no such conditions were observed, the molten metal itself being quite still and showing no tendency to bubble when stirred. Comparisons were made between metals from the coal furnace and those from the gas furnace with some remarkable results. The gas melted metal showed greater strength, was free from gas holes (due to absence of oxidation), and its wearing qualities have much greater satisfaction than the metals from the coal and coke-fired furnaces.

The following figures give a comparison of the tensile strength of brass obtained from the gas-fired and coal-fired furnaces:

Gas-Fired.

Casting 1	11·56 tons per sq. in.
,, 2	12·00 ,, ,,
,, 3	12·744 ,, ,,
,, 4	12·84 ,, ,,

The highest tensile strength obtained with the coal or coke fired furnace was 10·136 tons per sq. in.

When a brass of the following composition

Cu	86·75 %
SN	6·69 ,,
Pb	6·21 ,,
Ph	0·098 ,, remainder Zn, Al, Mn

was used, the castings were tested and the tensile strengths recorded were:

Castings 1.	13·63 tons per sq. in.
,, 2.	14·196 ,, ,, ,,
,, 3.	13·36 ,, ,, ,,
,, 4.	16·14 ,, ,, ,,

The last figure is as high as, if not higher, than any ever obtained with brass of the above composition. Tensile strength of such brass obtained from coal firing was 6·83 tons per sq. in.

Again, I may say that looking through the Foundry Foreman's returns and comparing results obtained with coal firing, and since installing gas, cracks, which were fairly evident with coal firing due to overheating, were conspicuous by their absence with gas firing.

Conversion of Furnace.

We were then asked to re-convert the furnace to our own design, but to do so with the co-operation of the foundry manager. From our previous experience we had to pay attention to all the faults which were previously enumerated, as well as to add other improvements of our own. The alterations we decided to make were:

(1) To decrease the length of the furnace and thereby eliminate the necessity of any burner equipment for the bowl, and thus obviate any possibility of burning the molten brass.
(2) To build the furnace as small and as compact as possible to dispense with the necessity of surplus heat for the surplus brickwork, and to enable the metal to receive as much concentrated heat as possible.
(3) To insulate the furnace as thoroughly as possible and prevent the radiation losses.
(4) To install a better means of taking off the waste products of combustion than an overhead flue so that their sensible heat could be brought into closer contact with the molten metal in the bowl.
(5) To install a recuperator, thoroughly insulated.

The new furnace was built considerably shorter with a square hearth (of dimensions required by the Foundry Manager) and a wider and deeper bowl. Two rows of eight burners were fitted into the back wall as before at arch and hearth level. The arch was lowered, and over all the fire brickwork an outer shell of Fossalite insulating bricks was built.

The flue instead of being built in the arch was built in the end wall of the furnace just above the highest possible level of molten brass. This flue was led to the side of the furnace, and on it was placed a cast-iron tubular heat interchanger. This was well insulated by an asbestos insulating rope kept together with an outer jacket.

The air line from the interchanger to the furnace was

also similarly insulated. Both rows of burners are supplied by 1½-in. gas manifolds and 2-in. air manifolds, each burner having a separate regulating cock for both gas and air. These are set to give the best mixture and then all are controlled by the main cocks. These are linked together forming a special proportioning gas and air valve and are worked by a single lever.

The gas manifolds are branches from a main 2-in. supply which is governed to give 15/10-in. water gauge pressure at a point just before the manifolds, while the air manifolds are branches from a 3-in. supply coming from the heat interchanger. Air is maintained at a pressure of 5-in. water gauge.

Working Data.

Operating temperature	1,250° C.–1,300° C.
Gas pressure	15 10 in. W.G.
Air	5 in. W.G.
Calorific value	425 B.Th.U. per c.ft.
Atmosphere	Reducing
% CO in waste gases	0·9%
Temperature of air	600° F.
Time taken to bring air to temperature	75 minutes

Operating Temperature.

The temperature at which brass is melted is not a fixed one. Factors to be considered are:

(1) Size and nature of castings.
(2) Composition of metal.
(3) Distance metal has to run before entering mould.
(4) Temperature of mould.
(5) Rate of cooling of brass.

The temperature given above is rather high when one considers the normal melting point of brass is 1,050°-1,100° C.; but all castings worked from this furnace were of the pickling cradle type—frames 8 ft. by 6 ft., with a number of cross-pieces, which required a tremendous run of metal and necessitated the increased temperature.

After quietly drying out the furnace we looked in the ensuing operations for far better results than previously obtained. We certainly had them. The improvements executed, together with the installation of a recuperator, were more than justified.

Results Obtained.

FIRST CHARGE.

Furnace lit up	10.30 a.m.
,, charged	11.30 a.m.
,, tapped	1.45 p.m.
Time taken	3 hours 15 mins.
Charge	20 cwt. 2 qrs. (2,296 lbs.)
Composition	82% Cu, 10% SN, 8% Pb
Consumption	10,360 c.ft.
Consumption per lb. brass	4·5 c ft.
Efficiency	21 ,,

SECOND CHARGE.

Furnace recharged	2.10 p m.
,, tapped and shut down	4.5 p.m.
Time taken	1 hour 55 mins.
Charge	20 cwt. 20 lbs. (2,260 lbs.)
Composition	82% Cu, 10% SN, 8% Pb
Consumption	4,940 c.ft.
Consumption per lb. brass	2·2 c.ft.
Total charge	4,556 lbs.
,, time taken	5 hours 35 mins.
,, consumption	15,300 c.ft.
Average consumption per lb. brass	3·3 c.ft.
Efficiency	30%

The above results are just average figures. The low efficiency of this furnace may possibly surprise you; but when you consider that the furnace is used only intermittently, being operated every alternate day, and that most metal-melting processes are not highly efficient operations, you will see that this is quite an excellent figure, the efficiency figure for coal being as low as from 5-10%.

Costs.

The fuel cost of gas does not always compare favourably with coal; but overall costs, which include furnaceman's wages, unloading, wheeling, and charging coal, and cleaning out fires on the following day, gives a cost definitely in our favour.

Gas cost to coal cost	19% higher
Overall gas cost to overall coal cost	37% to 38% lower

Long-Distance Gas Distribution in Germany

by
Dr. FRITZ GUMMERT

In the "JOURNAL" last week we published a paper bearing the above title which Dr. Gummert, Director of the Ruhr Gas Company, presented to the Yorkshire Junior Gas Association at Sheffield on Jan. 19. The following is a report of the Discussion.

The PRESIDENT (Mr. Ralph Halkett, Junr.) said the type of expansion joint used by the Ruhr Gas Company was very different from the British. The joint in use in the Ruhr consisted of a form of corrugation on the end of the pipe, to take up any stresses.

Mr. RALPH HALKETT, Senr. (Sheffield), said it gave him great pleasure to be present to hear the able address delivered so well in English by Dr. Gummert. He had paid a visit to the Ruhr on two occasions and was very struck with what was being done, but he must say a word for Britain. He thought they knew more about gas distribution than the Ruhr Gas Company did when the latter commenced. One had only to go about Germany to see that gas was used very little for domestic purposes. He could not say that he visited many houses, but in the hotels one never saw a gas fire. The members knew what the gas fire load was in this country; in the winter it was a great asset. When they came to the industrial side, no doubt there was, in the heart of Essen, room for great development of the industrial uses of gas.

When they commenced taking coke oven gas in this country they were not on virgin soil by any means; they had already developed their industrial load to a certain extent. Prior to the Sheffield Gas Company taking coke oven gas, their industrial load ranked between 30% and 40% of their total output. Moreover, as Dr. Gummert had pointed out, 60% of the gas supplied by the Ruhr Gas Company was to their own shareholders. They were really supplying themselves, whereas in Great Britain they were supplying the community at large. This was a different proposition, because one had to persuade the industrial consumer that gas was the best fuel. In England they worked under quite different conditions from those in Germany. They were under statutory obligations. If statutory rights of supply operated in Germany they would find it a very difficult matter to run through the country as they had done, because they would have strong opposition. His Company, as pioneers in the use of coke oven gas, had been able to overcome the opposition, probably at a sacrifice. He took it that the only difficulty that Dr. Gummert had found, except when he had gone to large towns, was with the wayleaves, for which he had had to get compulsory powers. For instance, if they wanted to go through certain land and the owner refused he would apply to the Government, who would give compulsory power. Such a state of affairs did not obtain in this country.

He was interested to hear Dr. Gummert say that, by taking gas from the grid, some of the large towns were not making coke, and, therefore, gas could supplant coke. They had not found that the case in this country. They had taken coke oven gas and were not making any coke, but there was still plenty of coke in Sheffield. It was brought in by the coke oven people, and therefore they had competition from coke. The very people from whom they were taking gas were now selling coke in their district, and were their competitors when the Sheffield Gas Company appealed to the public to consume gas.

Mr. Halkett said he was a great believer in gas. It took them years to convince the large industrial users of Sheffield that gas was the ideal fuel, but now they were enjoying big increases in consumption. This year the increase was 12%, the year before 17%, and the year before that 5%. He was sure they would advance by leaps and bounds.

Mr. H. CHAMBERLAIN (Sheffield Gas Company) added his

3 of the 5

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The Ovens are designed on the top-flue principle, with auxiliary outlets which provide that equalised temperature so necessary to successful automatic control. Thus they ensure good top browning heat without the aid of a browning shelf.

Literature available for distribution to consumers.

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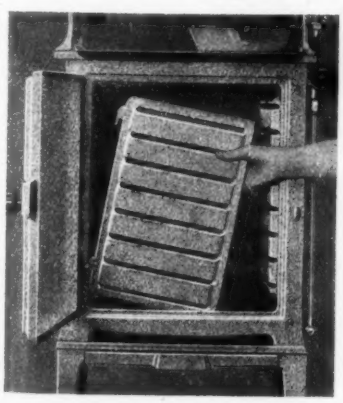

A notable feature in the design of these Cookers is the Oven Grid Shelves, which can, of course, be used in any of the runners or slots provided in the Hangers. In addition, each shelf may be used the reverse way in any runner to alter its height. These Shelves provide a variety of shelf spacings never before available.

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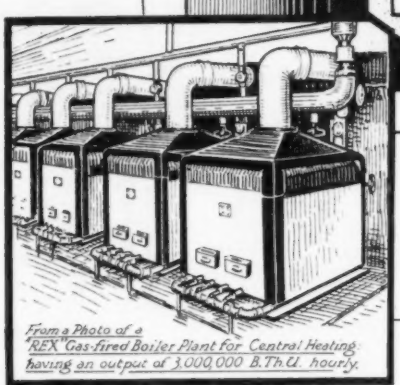

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tribute to Dr. Gummert for his excellent address. The author had stated that improvement in the quality of the coke went hand in hand with a better yield of gas. They in the Gas Industry believed that 50 years ago, but it was difficult to make the coke oven owner realize it. Coke oven owners, particularly in South Yorkshire, owed a great deal to the Gas Industry, and particularly the Sheffield Gas Company, in pointing this out to them.

With reference to Dr. Gummert's statement that the pipes were welded at the joints by the oxy-hydrogen flame, he thought the author alluded to the making of the pipes and not to the laying of them. With reference to the welding of the joints in laying the main, Dr. Gummert said they were experimenting with electric welding at the present time, though the experiments were not yet concluded. As most of those present knew, the whole of the Sheffield Gas Company's grid mains joints were made with the electric arc. Whichever process was used in the jointing of the pipes, they were to a large extent dependent upon the skill of the workman. A good acetylene welded joint was better than a bad electrically welded joint, but they had found from their experience that a good electrically welded joint was far superior to the best oxy-acetylene welded joint. It depended not only upon the skill of the workman, but also upon the efficiency of the generating plant. They had been fortunate in being able to purchase a plant which had given them excellent results, and, as the President informed them at the last meeting, they had in their employ a welder who worked joints on pipes from 24 in. downwards with 100% efficiency on test.

It was very interesting to know that Dr. Gummert gave a life of 30 years for steel mains. He thought that was the opinion in this country.

He envied the Ruhr Gas Company the elasticity of the gas they could command. It appeared that the quantity of gas they were taking from the coke ovens was considerably less than the total output under the best conditions; they always seemed to have a little up their sleeve. Coke ovens in this country, and, he supposed, in Germany, were liable to a drop of 10% without warning. If they were taking the full output of a coke oven and there was a sudden drop of 10%, they had to provide a good deal of gas, and as it was usually the case when the demand went up 10% or 20%, Dr. Gummert would understand what they had to contend with in this country. The daily variation throughout the week was very closely allied to Sheffield's, but Germany sold a little more on Sundays than they did. Dr. Gummert's hourly variations were very surprising to him, as they were very much less than their own. From the author's figures the greatest variation during the 24 hours of the working day was 35%—*i.e.*, the minimum was 65% of the maximum amount. In Sheffield's case the minimum was 30% of the maximum.

Mr. B. THORPE (Huddersfield) remarked that, in reference to Dr. Gummert's assertion that they regarded the consumption of gas for firing steam boilers as economic idiocy, he would like to remind the author that in this country they looked upon steam raising in a certain type of boiler as part of their industrial load. He was astounded to hear Dr. Gummert say he found no condensation when the gas was subjected to a pressure of 470 lbs. per sq. in.

Mr. F. A. C. PYKETT (Coventry) was interested to hear Dr. Gummert mention that the whole of the pipes were of wrought iron. He thought that in England the general practice was steel. Regarding the life of the mains, they certainly thought that the life of steel mains was going to exceed 30 years, but he believed it was general practice in England to limit the period of the loan to 15 years for steel mains.

Mr. A. W. ELLIOTT (Elland) said that wrought-iron mains in the Ruhr were contrary to practice in England. The advantages they claimed for steel when wrapped and dipped with pitch composition were that it was cheaper and stronger and easier to weld, and they expected a life of 30 years. A point which struck him was the low percentage of gas used for domestic purposes, and it seemed that the municipalities themselves were responsible for this state of affairs. The municipalities would be well advised to foster the use of gas for domestic purposes and be content with a smaller percentage profit.

Mr. J. T. HAYNES (Rotherham) remarked that the paper was a fund of information and an incentive to greater effort. There seemed to be a fundamental difference between the Ruhr grid and South Yorkshire practice. Dr. Gummert suggested that the origin of the Ruhr grid was of having an enormous quantity of gas available which steelworks could not absorb and the necessity for diverting it and conducting it to where it could be absorbed. In South Yorkshire the problem was to convey the gas from a number of different points and bring it to a centre where the steelworks required it. That difference would account for quite a number of varying problems arising in Germany and in this country. Another difference was that the Ruhr grid did nothing to purify coke oven gas. For some reason, in this country, coke oven authorities objected to the purification of gas at the coke ovens. So many important problems arose in handling crude gas compared with purified gas. Another marked difference between German and English practice, as illustrated in the paper, was the relationship between the grid and municipalities.

Mr. J. W. CARLTON (Senior Vice-President, Shipley) remarked that in the paper there were no details of the cost of gas purchased from the coke ovens or the cost of transmission. He understood that the cost of transmission in this country was about a penny per 1,000 c.ft. per ten miles, and therefore 50 miles was the economic limit for long-distance transmission. There were, in addition, capital charges, the cost of compulsory purchase of land for putting pipes through fields, and payment for wayleaves.

Mr. RALPH HALKETT, Senr., said there had been a lot of controversy as to whether it ought to be crude or purified gas. When the Sheffield Gas Company's 1931 Bill was going through they pushed for purified gas, but after many meetings and many discussions they had to give in. He thought the main factor was that it meant capital outlay for the coke oven people. The coke ovens had been having rather a lean time, and to put down purifiers to purify the whole of the gas at the coke ovens would have meant a good deal of money. He believed that some of the steel people thought they could use crude gas to a great extent, but from experience they had found that it was not possible, and the Gas Company were taking steps now to purify their gas.

Dr. GUMMERT, replying, said that coke ovens in the Ruhr district were for the production of coke and the gas business was only a bye-product business, so that on Sundays they heated the steam boilers at the collieries with gas. On the other days they used coal slack.

In regard to compulsory powers for laying mains, in 99 cases out of 100 when they had obtained them they arrived at a voluntary agreement. If no agreement was reached, then they asked the Government. In nearly all cases the Government's representative said that the compensation paid to the owner must be lower than the Company offered before.

He admitted they were not content with their success in the domestic field. The towns said, "We are glad that you are delivering this fine long-distance gas," but they were not at all, because they looked upon them as strong competitors.

Mr. R. HALKETT, Senr., said it seemed as if the Ruhr company were the suppliers and the buyers. What he would like Dr. Gummert to make quite clear was whether his Company made contracts with any of the coke ovens for a fixed quantity of gas. That was what they had to do in England, and it was a difficulty. They did not get a great deal of latitude, and had to make a contract to take so many cubic feet per day.

Dr. GUMMERT replied that it was a first charter of their Company that their shareholders were not allowed to sell their gas except via the Ruhr Company. Therefore the latter had no competition from their own shareholders. They could not go to all the shareholders of the 40 coke oven plants and take gas from them by expensive mains because that would be uneconomic. They went to the shareholders who had the most surplus gas and were nearest to them and said, "We will begin with you." There was a flexibility in the minimum that they should take, and the maximum was very big. At week-ends they only took what they needed.

Mr. JENKINS, a Sheffield linguist who had translated Dr. Gummert's written address from the German into English, replied on the question of wrought-iron pipes versus steel pipes. He said that in spite of the higher cost, wrought-iron pipes were preferred to steel because they were more easily worked and there was greater flexibility in the pipe itself. If there was any defect in the jointing it admitted readier caulking than in the case of a steel pipe.

Mr. J. W. CARLTON (Shipley) moved a vote of thanks to Dr. Gummert, and Mr. J. W. HOLROYD (Rotherham) seconded, Dr. GUMMERT briefly replying.

On the motion of Mr. J. W. WOOD (Leeds), seconded by Mr. D. T. LIVESEY (Doncaster), a vote of thanks was passed to the Sheffield University authorities for allowing them the use of the Mappin Hall; and thanks to the Sheffield Gas Company for their kindness in providing tea were voiced by Mr. E. R. B. FRENCH (Leeds) and Mr. A. W. ELLIOTT (Elland).

Mr. R. HALKETT, Senr., replying, said the Sheffield Gas Company were always delighted to see the Yorkshire Juniors and do what they could to assist them.

Gas Undertakings' Results

Yorktown (Camberley).

The gross profit for the year ended Dec. 31, 1934, in respect of the combined Undertaking of the Yorktown (Camberley) and District Gas and Electricity Company amounts to £23,424, and the profit and loss account shows that, after providing for debenture and other interests, dividends on preference stock for the year 1934, and the dividend at the rate of 6½% per annum *less* tax at 4s. 6d. in the £ on the consolidated ordinary stock for the half-year to June 30, 1934, there is a balance of £14,290 available for dividends. The Directors accordingly recommend that dividends at the following rates be declared for the half-year ended Dec. 31, 1934: 5% per annum on the consolidated preference stock, and 6½% per annum on the consolidated ordinary stock, both *less* income tax at 4s. 6d. in the £. The ordinary dividend will absorb £3,236 in addition to the preference dividend already provided for, leaving £11,053 to be carried forward to the next account. The business of the Company continues to be satisfactory, gas sales showing an increase of 1·28% over 1933.

Diaries, Calendars, &c.

Further seasonable gifts in the form of diaries, calendars, &c., have been received from the undermentioned friends, whose good wishes are heartily reciprocated:

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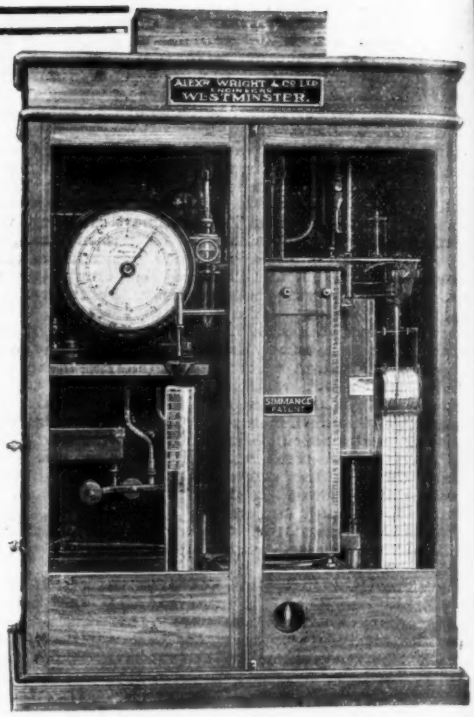

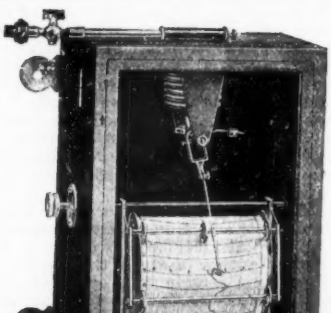

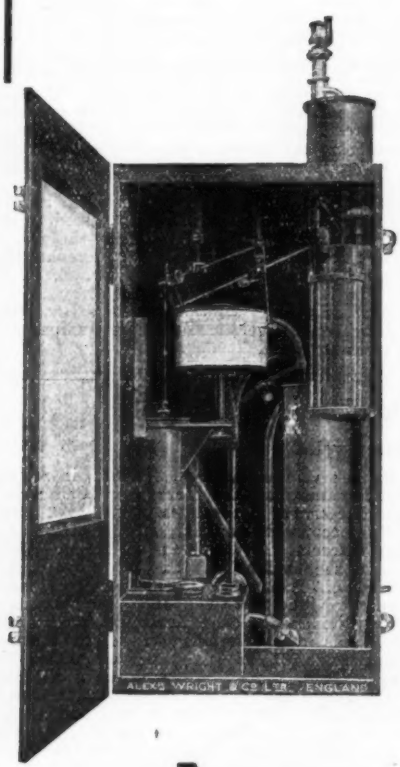

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Gas Markets and Manufactures

Stock Market Report

(For Stock and Share List, see later page)

Most markets were in a somewhat uncertain mood last week. Gilt-edged securities opened weak, being unsupported by the large buyers, but towards the close the market took a turn for the better and prices recovered. The result of the London County Council £10,000,000 loan caused rather a shock. It will be remembered that this was a 2¾% stock at par, and no less than 55% of the issue was left with the underwriters; dealings closed on Friday at ¾ discount. A feature of the Home Rail market was the continued improvement in Great Western ordinary on dividend anticipation. Industrials were steady, the outstanding event being the rise in Imperial Tobacco shares by reason of the increased distribution from 20%, free of tax, to 22½%, free of tax.

The chief items of interest in the Gas Market last week were the dividend announcements by the three Metropolitan Companies. It is very satisfactory to record that, despite the extremely abnormal weather conditions during the latter part of the year, our largest undertaking, the Gas Light and Coke Company is maintaining its dividend for the last half of the year at £2 16s.%, making £5 12s.% for the year, the rate paid for the previous five years. The other two Companies, the South Metropolitan and Commercial, were not quite so fortunate, and in each case a small reduction, compared with 1933, of ¼% in the final dividends has been announced. The Directors of the South Metropolitan Company are recommending a final dividend of 3¼%, making 5¾% for the year, while the Commercial Gas Company is distributing 3%, making 5½% for the year.

It is understood that in the course of this week the Gas Light and Coke Company is making a public issue of £2,500,000 3% consolidated irredeemable debenture stock. The new stock will rank *pari passu* with similar stock now existing. The latter is at present quoted at 93½, though a transaction was recorded at the close of last week at 94¾.

Business was quite brisk in the Gas Market, and it will be seen by reference to the Stock and Share List that a number of prices continue to harden, particularly those of ordinary stocks, many of which now include almost a full final or half-year's dividend. The only fall of note occurred in South Metropolitan ordinary on the dividend announcement, the quotation dropping 9 to 142½, at which price the yield on a 5¾% dividend basis is £4 0s. 8d.%.

Current Sales of Gas Products

The London Market for Tar Products.

LONDON, *Jan.* 28.

In the Tar Products market the chief item of interest is the continued advance in the value of creosote; but other products are without particular change. Current values are as under:

Pitch, 46s. to 48s. per ton f.o.b.

Creosote, 5d. to 5½d.

Refined tar, 4d. to 4¼d. per gallon in bulk at makers' works.

Pure toluole, 2s. 2d. to 2s. 3d.; pure benzole, 1s. 9d. to 1s. 10d.; 95/160 solvent naphtha, 1s. 7d.; and 90/160 pyridine, 6s. 3d. to 6s. 6d.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Jan. 28.

The average prices of gas-works products during the week were: Gas-works tar, 21s. to 26s. Pitch—East Coast, 44s. to 46s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 44s. to 46s.* Toluole, naked, North, 1s. 7d. to 1s. 9d. Coal-tar crude naphtha, in bulk, North, 6⅛d. to 6¾d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4½d. Heavy naphtha, North, 9¾d. to 10¾d. Creosote, *ex* works, in bulk, North, liquid and salty, 4⅛d. to 4⅜d.; low gravity, 4⅛d. to 4⅜d.; Scotland, 4⅛d. to 4⅜d. Heavy oils, in bulk, North, 4d. to 4¼d. Carbolic acid, 60's, 1s. 8d. to 1s. 9d. Naphthalene, £10 to £11. Salts, 55s. to 75s., bags included. Anthracene, "A" quality, 2½d. to 3d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Jan.* 26.

Creosote oil is advancing in price with supplies well looked after, but other products show little or no alteration during the week.

Crude gas-works tar.—Actual value remains at 29s. to 31s. per ton *ex* works in bulk.

Pitch.—Supplies are difficult to move, but distillers are maintaining quotations at 43s. to 44s. per ton f.o.b. Glasgow for export and 42s. 6d. per ton f.o.r. works in bulk for home trade.

Refined tar.—Competition is keen, but value is considered to be low at 3d. to 3⅛d. per gallon f.o.r. naked.

Creosote oil.—With railway business now fixed, there is very little surplus oil available over the next few months. B.E.S.A. Specification, 4½d. to 4⅝d. per gallon; low gravity, 4⅜d. to 5d. per gallon; and neutral oil, 4½d. to 4⅝d. per gallon; all f.o.r. in bulk.

Cresylic acid.—Market is quiet with prices unchanged. Pale, 97/99%, 1s. 3d. to 1s. 4d. per gallon; dark, 97/99%, 1s. 1d. to 1s. 2d. per gallon; and pale, 90/100%, 1s. 4d. to 1s. 5d. per gallon; all *ex* works.

Crude naphtha.—Producers are still holding for 4d. to 4½d. per gallon, according to quality and district.

Solvent naphtha.—90/160 grade is 1s. 3d. to 1s. 4d. per gallon, and 90/190 heavy is 9d. to 10d. per gallon.

Motor benzole is valued at 1s. 3d. to 1s. 4d. per gallon for reasonable quantities.

Pyridine.—90/160 grade is 5s. 6d. to 6s. per gallon, and 90/140 grade 6s. to 6s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	9	to	0	9½	per gallon at works
Motor ,,	1	3½	,,	1	4	,, ,, ,,
90% ,,	1	4	,,	1	4½	,, ,, ,,
Pure ,,	1	7½	,,	1	8	,, ,, ,,

Contracts Advertised To-Day

Boilers, Elevating and Stoking Machinery, &c.
Halifax Corporation. [p. 265.]

Coal.
Ripon Gas Department. [p. 265.]

Condenser.
Hebden Bridge and Mytholmroyd Gas Board. [p. 265.]

Condenser and Washer, &c.
Rothesay Gas Department. [p. 265.]

General Stores, Brass Stop Cocks, &c.
Stoke-on-Trent Gas Department. [p. 265.]

Main Laying.
Milford Haven Urban District Council. [p. 265.]

Mantles.
Stoke-on-Trent Gas Department. [p. 265.]

Pipes, &c.
Stoke-on-Trent Gas Department. [p. 265.]

Storage Bunkers.
Halifax Corporation. [p. 265.]

Trade Notes

Centrifugal Washer for Yorktown.

Messrs. Kirkham, Hulett, & Chandler, Ltd., of Union Foundry, Mansfield, have recently received an order from the Yorktown (Camberley) and District Gas Company for one of their patent "Spiral" centrifugal washers for the extraction of ammonia from their gas.

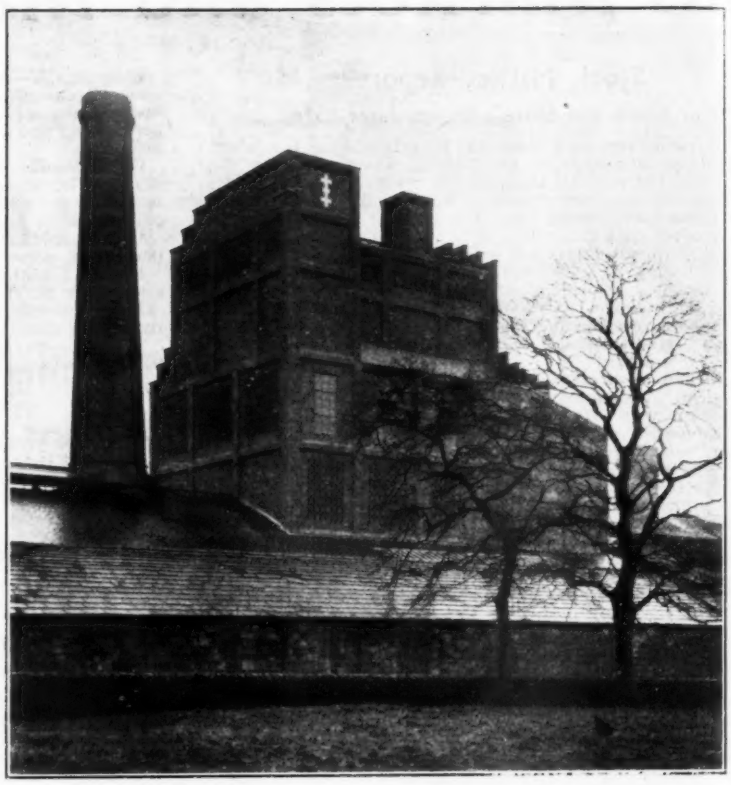
A Price per Piece for Cochranes' Standard Specials.

Cochranes (Middlesbro') Foundry, Ltd., have issued a price-list of Standard Specials delivered free to any railway station in Great Britain and Northern Ireland. It is claimed that this is the first case of an offer to sell Standard Specials at a price per piece on a price list. Due to economy introduced by standardization, it is stated by the firm that the prices quoted per piece are far below those generally quoted for this class of Special, and that the Standard Specials set out in the list can always be depended upon as being in stock at Middlesbrough and available for despatch within 24 hours.

New John Wright Cooker Literature

New publications dealing with their "Eureka" "New World" cookers have been issued by John Wright & Co., Ltd., of Aston, Birmingham, under the novel title, "Magic Meals." The same attractive colour scheme runs throughout the series, including also the specially designed letter-heading and envelope for mailing to gas undertakings. The lists contain full details and illustrations in actual colours of the firm's cookers, with particular attention to the advantages of automatic oven control. It is believed that the production of a suite of lists in this way, with a standard distinguishing colour scheme, is an entirely new idea, and it certainly makes a very striking and attractive set of publications.

An Installation of Glover-West Vertical Retorts put into service at YEADON



GLOVER-WEST
VERTICAL RETORTS

•

WESTVERTICAL
CARBONIZING
CHAMBERS

•

THE WEST
LIP-BUCKET CONVEYOR
WITH AUTOMATIC
FORCED LUBRICATION

•

THE WEST
BALANCED RECIPROCATING
COKE GRADER

•

THE WEST-CALVERT
COKE CUTTER

•

COAL AND COKE
HANDLING PLANT
OF ALL TYPES

The latest installation of Glover-West verticals to be brought into regular operation was started up on December 27th, 1934, at the works of the Yeadon and Guiseley Gas Company. There are 8 retorts in this unit, with a total daily capacity of 800,000 cubic feet of gas.

360 plants are now installed or on order.

WEST'S CARBONIZING & FUEL-HANDLING SYSTEMS

WEST'S GAS IMPROVEMENT CO., LTD.

LONDON: REGENT HOUSE, KINGSWAY, W.C. 2. 'Phone: Holborn 4108. 'Grams: "Imvertret, Westcent." **MANCHESTER:** ALBION IRONWORKS, MILES PLATTING. 'Phone: Collyhurst 2961. 'Grams: "Stoker, Manchester."

STOCK AND SHARE LIST.

Official Quotations on the London and Provincial Stock Exchanges.

Issue. £	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Jan. 25.	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
1,551,868	Stk.	Sept. 10	7	7	Alliance & Dublin Ord. ...	135—145	...	139½—140½
274,000	"	Dec. 17	4	4	Do. 4 p.c. Deb. ...	90—100	...	96
557,655	"	Aug. 13	7	7	Barnet Ord. 7 p.c.	168—173	...	...
800,000	1	Oct. 8	1/9½	1/4½	Bombay, Ltd.	30/— 32/-	...	31/—31/6
178,480	Stk.	Aug. 13	9½	9½	Bournemouth sliding scale	227—237	...	...
550,050	"	"	7	7	Do. 7 p.c. max. ...	172—177	...	...
439,160	"	"	6	6	Do. 6 p.c. Pref. ...	150—155	...	153—154½
50,000	"	Dec. 17	8	8	Do. 3 p.c. Deb. ...	86—91	...	...
262,025	"	"	4	4	Do. 4 p.c. Deb. ...	106—111	+1	...
335,000	"	"	5	5	Do. 5 p.c. Deb. ...	130—135	+2	...
357,900	"	Aug. 13	7½	7½	Brighton, &c., 6 p.c. Con. ...	181—186	...	...
540,000	"	"	6½	6½	Do. 5 p.c. Con. ...	160—165	...	...
195,500	"	"	6	6	Do. 6 p.c. B. Pref.	145—150	...	...
1,487,500	"	July 9	5	5	Bristol 5 p.c. max.	122—124a	+2	...
190,420	"	Dec. 17	4	4	Do. 1st 4 p.c. Deb. ...	102—104a	...	...
217,870	"	"	4	4	Do. 2nd 4 p.c. Deb. ...	102—104a	...	...
338,790	"	"	5	5	Do. 5 p.c. Deb.	122—124a	...	...
885,000	"	Sept. 24	8	7	British Ord.	174—179	...	176—176½
100,000	"	Dec. 17	7	7	Do. 7 p.c. Pref.	160—165	...	...
120,000	"	"	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...	...
450,000	"	"	5	5	Do. 5 p.c. Red. Deb. ...	111—116	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	...
100,000	10	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	...
150,000	Stk.	Dec. 17	4½	4½	Do. 4½ p.c. Deb. ...	90—95	...	...
626,850	"	Jan. 21	6	6	Cardiff Con. Ord.	133—138*	−2	139
287,860	"	Dec 17	5	5	Do. 5 p.c. Red. Deb.	105—110	...	...
157,150	"	July 23	6⅔	5	Chester 5 p.c. Ord.	113—118b	...	...
98,936	1	Sept. 24	2/-	2/-	Colombo, Ltd. Ord.	1⅝ -1⅞	+1/3	35/—35/9
24,500	1	"	1/4½	1/4½	Do. 7 p.c. Pref. ...	19/6 - 21/6	...	...
609,204	1	Sept. 24	/11'48	/11'48	Colonial Gas Assn. Ltd. Ord.	19/6 - 21/6	...	...
296,058	1	"	1/8'80	1/8'80	Do. 8 p.c. Pref.	25/—27/-	+/6	...
1,775,003	Stk.	July 23	6½	5	Commercial Ord.	122—127	...	125½—126½
475,000	"	Dec. 3	5	3	Do. 3 p.c. Deb. ...	88—92	...	...
286,344	"	Aug. 13	5	5	Do. 5 p.c. Deb. ...	125—130	...	...
807,560	"	Aug. 13	7	7	Croydon sliding scale ...	167—172	...	169
569,590	"	"	5	5	Do. max. div.	116—121	...	118—120
620,385	"	Dec. 17	5	5	Do. 5 p.c. Deb.... ...	130—135	...	134½
542,370	"	Aug. 13	10	7	Derby Con.	200—210a	...	...
55,000	"	Dec. 17	4	4	Do. 4 p.c. Deb.	100—105a	...	...
209,000	"	Aug. 13	5	5	East Hull Ord. 5 p.c. ...	113—118	...	...
181,625	"	Aug. 13	6	6	East Surrey Ord. 5 p.c. ...	140—145	...	...
175,509	"	Dec. 17	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
1,002,180	"	Sept. 10	†7	†5	European, Ltd.	120—125	...	...
13,513,451	"	Aug. 13	5⅝	5⅝	Gas Light & Coke 4 p.c. Ord.	28/— 29/-f	...	28/—28/10½
2,500,000	"	"	3½	3½	Do. 3½ p.c. max. ...	94—98	+1	96½—97½
4,477,106	"	"	4	4	Do. 4 p.c. Con. Pref. ...	110—113	+1	111—112½
6,102,497	"	Dec. 3	3	3	Do. 3 p.c. Con. Deb. ...	92—95	+1	93½—94½
3,643,770	"	"	5	5	Do. 5 p.c. Red. Deb. ...	118 - 121	...	120—120½
3,500,000	"	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	117—120	...	119—119½
270,455	"	Aug. 13	6	6	Harrogate New Cons. ...	140—145	...	...
140,000	1	Sept. 24	1/7½	1/7½	Hongkong & China, Ltd. ...	1⅛-1⅜	...	...
213,200	Stk.	Aug. 13	6	6	Hornsey Con. 5½ p.c. ...	187—142	...	...
5,600,000	"	Oct. 22	14	10	Imperial Continental Cap.	217—222	...	218—220
223,180	"	Jan. 21	8½	8½	Do. 8½ p.c. Red. Deb.	91—96*	−1	94—95
285,242	"	Aug. 13	8½	8½	Lea Bridge 5 p.c. Ord. ...	190—200	...	...
2,167,410	"	Aug. 13	6	6	Liverpool 5 p.c. Ord. ...	146—148b	+2	...
245,500	"	Dec. 17	5	5	Do 5 p.c. Red. Pref. ...	105—110b	...	...
806,088	"	Jan. 16	4	4	Do. 4 p.c. Deb. ...	104—107b*	...	...
11,751	"	Aug. 27	10	8	Maidstone 5 p.c. Cap. ...	188—198	...	...
63,480	"	Dec. 17	8	8	Do. 8 p.c. Deb. ...	85—88	...	...
75,000	"	Dec. 8	†10	†10	Malta & Mediterranean ...	205—215	...	...
899,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	102—107	+3	104½—106½
231,978	Stk.	Aug. 13	5	5	M. S. Utility "C." Cons. ...	115—120	...	...
818,557	"	"	4	4	Do. 4 p.c. Cons. Pref.	101—106	...	104½—106
360,075	"	Dec. 17	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
148,955	"	"	5	†5	Do. 5 p.c. Deb. ...	127—132	...	...
125,000	—	Jan. 2	11/8	3½	Do 3½ p.c. Rd. Rg. Bds.	98—101	...	...
675,000	"	May 28	†6	†13	Montevideo, Ltd.	55—65	...	...
2,081,315	"	Aug. 13	5½	5	Newcastle & Gateshead Con.	26/6 - 27/6d/	−/3	...
682,856	"	"	4	4	Do. 4 p.c. Pref. ...	105—107d	...	...
776,706	"	Dec. 17	3½	3½	Do. 3½ p.c. Deb. ...	98½—100½d	...	...
277,285	"	Oct. 8	5	5	Do. 5 p.c. Deb. '48 ...	105—107d	...	...
274,000	"	Aug. 13	5	5	Newport (Mon.) 5 p.c. max.	110—112a	...	...
204,940	"	Aug. 13	7½	7½	North Middlesex 6 p.c. Con.	172—177	...	175
396,160	"	Aug. 13	5	5	Northampton 5 p.c. max. ...	107—112	...	...
800,000	"	Nov. 5	†7	†9	Oriental, Ltd.	168—173	...	...
416,617	"	Dec. 17	8	8	Plym'th & Stonehouse 5 p.c.	182—187	+2	184½—185
504,416	"	Aug 13	9	9	Portsm'th Con. Stk. 4 p.c. Std	185—190	+2	188½—189½
241,446	"	"	5	5	Do. 5 p.c. max. ...	112—117	...	...
114,000	"	July 23	5	5	Preston 5 p.c. Pref.	110—115	...	...
1,736,968	Stk.	Aug. 27	6	6	Sheffield Cons.	147—149e	...	...
95,000	"	Jan. 7	4	4	Do. 4 p.c. Deb.	100—104e	...	...
133,201	"	Aug. 13	5	2½	Shrewsbury 5 p.c. Ord. ...	155—160	...	...
90,000	10	May 28	†4	†3	South African	3—4	...	3½
927,177	1	Sep. 10	1/23	1/23	South-East'n Gas Cn. Ld Ord.	30/— 32/-	−/6	30/6
786,061	1	"	-/10⅔	-/10⅔	Do. 4½ p.c. Red. Cum. Pref.	22/6—23/6	...	23/4½
450,000	Stk.	Aug. 13	74/4	4	Do. 4 p.c. Red. Deb. ...	102—105	...	...
6,709,895	"	Aug. 13	7	5	South Met. Ord.	140—145	−9	140—153
1,185,812	"	"	6	6	Do. 6 p.c. Irred. Pf.	151—156	+1	153½—155
850,000	"	"	4	4	Do. 4 p.c. Irred. Pf.	107—110	...	...
1,895,445	"	Dec. 17	3	3	Do. 3 p.c. Deb. ...	90—93	...	93—94
1 000,000	"	Jan. 7	5	5	Do. 5 p.c. Red. Deb.	116—120*	...	...
209,820	"	Aug. 13	8½	8½	South Shields Con.	186—188d	...	...
1,543,795	"	July 9	6	6	South Suburban Ord. 5 p.c.	145—150	−2	145
512,825	"	"	5	5	Do. 5 p.c. Pref.	124—129	...	127½
300,000	"	"	4	4	Do. 4 p.c. Pref.	105—110	...	...
868,887	"	Dec. 17	5	5	Do. 5 p.c. Deb.	129—184	+1	132—134
100,000	"	"	4	4	Do. 4 p.c. Deb.	107—112	...	...
647,740	"	Aug. 13	5	5	Southampt'n Ord. 5 p.c. max.	118—123	...	...
121,275	"	Dec. 17	4	4	Do. 4 p.c. Deb.	102—107	...	...
350,000	"	Aug. 13	5½	5½	Swansea 5½ p.c. Red. Pref.	114—119	...	118½
200,000	"	Dec. 17	6½	6½	Do. 6½ p.c. Red. Deb.	100 -105	...	...
1,076,490	"	Aug. 13	6⅔	6⅔	Tottenham and District Ord.	168—170	+2	166½—168½
409,835	"	"	5½	5½	Do. 5½ p.c. Pref. ...	133—138	...	136
62,235	"	"	5	5	Do. 5 p.c. Pref. ...	122—127	...	125—127
199,005	"	Dec. 3	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
349,110	"	Aug. 13	7	7	Uxbridge, &c., 5 p.c. ...	168—173	+1	171½—173
88,330	"	"	5	5	Do. 5 p.c. Pref. ...	124—129	...	...
1,326,700	"	Aug. 13	7	7	Wandsworth Consolidated	168—173	...	172—172½
1,371,373	"	"	5	5	Do. 5 p.c. Pref.	127—132	...	...
1,317,964	"	Dec. 17	5	5	Do. 5 p.c. Deb.	130—135	...	135
208,300	"	"	...	26/8	Do. 4 p.c. Deb.	104—109	...	...
158,400	"	Aug. 13	6a	5	Winchester W. & G. 5 p.c. Con.	120—125	...	...

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. *g.*—Paid £8, including 10s. on account of back dividends. * Ex. div. † Paid free of income-tax. ‡ For year.

COMPANY NOTICES.

SOUTH SUBURBAN GAS COMPANY.

NOTICE is hereby given that the ANNUAL ORDINARY MEETING of the Proprietors of this Company will be held at the Abercorn Rooms, Bishopsgate, London, E.C. 2 (adjoining Liverpool Street Station), on FRIDAY, THE 22ND DAY OF FEBRUARY, 1935, at 12 o'clock noon precisely, for the following purposes:

To receive the Report of the Directors and Statement of Accounts for the Year ended 31st December last.

To declare a Dividend for the Half-Year ended the same date.

To elect two Directors and one Auditor in the place of those retiring by rotation.

For general purposes.

AND NOTICE IS HEREBY ALSO GIVEN that, in accordance with the Standing Orders of Parliament, an EXTRAORDINARY MEETING of the Proprietors of the South Suburban Gas Company will be held at the same place at 12.30 o'clock in the afternoon of the same day or so soon thereafter as the business of the said Ordinary Meeting shall have been concluded, for the purpose of considering, and, if thought fit, of approving a Bill proposed to be introduced into Parliament in the present Session, entitled:—

"A Bill to confer further powers upon the South Suburban Gas Company; and for other purposes."

Dated this 25th day of January, 1935.

By order of the Board,
T. BROWN,
Secretary.

THE CROYDON GAS COMPANY.

NOTICE is Hereby Given that an ANNUAL ORDINARY GENERAL MEETING of the Company will be held at the Company's Offices, Katharine Street, Croydon, on Friday, the 22nd day of February, 1935, at Five o'clock in the afternoon precisely, to receive the Report of the Directors and the Statement of Accounts for the Year ended 31st December last; to declare Dividends; to elect two Directors and an Auditor in the places of those who go out of office at the said Meeting, but who, being eligible, will offer themselves for re-election; and for transacting the General Business of the Company.

The REGISTER of TRANSFERS of REDEEMABLE PREFERENCE and ORDINARY STOCKS of the Company WILL BE CLOSED from the 9th February to the 22nd February, both days inclusive.

Dated this 11th day of January, 1935.

By order of the Board,
FRANK FILLINGHAM WOOD,
Secretary.

Chief Offices,
Katharine Street,
Croydon.

PATENTS.

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